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APPROACHES TO CHILDREN AND YOUTH THROUGH THE FORMAL SCHOOL SYSTEM AND THE COMMUNITY STRUCTURE*

SMT. AVABAI B. WADIA

(President, Family Planning Association of India)

In a Seminar devoted to Information and Education in the field of family planning, the topic "Approaches to children and youth through the formal school system and the community structure" relates to the promotion of what has generally come to be known as "population education".

The pressures being generated on a world-wide scale through huge population increases have brought about a situation never before experienced by the human race and this challenge has to be met likewise by evolving new types and modes of action.

The world has now reached the stage where large masses of people—in fact, the majority of the human race—are being pointedly and insistently introduced to the concept of planned families Furthermore, an even more complex idea has been added to this, for not only is it stressed that such voluntary planning is a duty owed to themselves and their progeny by every couple, but that, in the process, they should consider not only their purely personal predilections but develop a concern for societal needs and take them into account in such planning.

What is most significant is that the developed countries with low birth rates who have hitherto felt that population planning was a necessity only in the poorer countries which had fast-growing populations, are also coming round to this viewpoint now, impelled by the need to prevent further destruction of the environment and to preserve an ecological balance

The family planning movement is several decades old and started in the West where the working pattern adopted was that of a very confidential doctor-patient relationship—a pattern still prevailing there to a great extent. But, as the movement has begun to spread world-wide, it has gradually changed in character, to one where family norms have become a matter of public education and motivation, with a widespread chain of publicised clinics designed to reach out to all strata of society This change-over from a kind of "elite" service to one of mass approach, has been specially pronounced in the developing countries.

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* Paper presented at the Seminar on Information and Education, Governing Body, IPPF, London, October 1971

The stress and strains generated in this transformation into a mass programme are considerable, and have led sometimes to very unexpected innovations

The realisation is growing that where people by the million have to be helped to change over to a new life-style within a very short period, the appeal to them to adopt new attitudes and behaviour patterns cannot succeed if based on narrow considerations as, for example, on the grounds of health. What is needed is a whole new philosophy of life, taking into account not only the one aspect of rapid growth of population and its deleterious effects on the standards of living, but also other inter-related aspects which can focus on the totality of man's existence and functioning, both as regards the external environment and the more intimate aspects of inter-personal and family relationships

There seems to have been, of late, a rather sudden upsurge of interest and concern in recognising this inter-dependence of factors such as population, the environment, social and economic development, and as an ultimate, the quality of life ; so much so that we have now almost passed the point of asking *why* and have arrived at the practical stage of considering how to set about evolving a coherent and inclusive philosophy and formulating an action plan, of which, what is generally called population education, would form an important part.

The educational approach which has been adopted for creating an understanding among the younger age groups in regard to population and allied subjects, precludes any propagandist angle or "brain washing" At the same time, the approach is not purely pedagogic for it is not as more knowledge and study—as in the teaching of, say, geography or geometry—that population education can be advanced Population education has to be purposively oriented towards promoting an awareness which will, out of its own depths, lead to adaptations in their way of life, by the coming generation.

Definitions

Population education has been defined variously by various experts and probably many more attempts will be forthcoming in due course in this direction. A somewhat pedestrian but useful definition has been produced at the UNESCO Asian Regional Workshop held in Bangkok in September 1970, as follows : "Population education is an educational programme which provides for a study of the population situation in the family, community, nation and world, with the purpose of developing in the students, rational and responsible attitudes and behaviour towards that situation".

One has the strong feeling that population education seems to be one of those areas of knowledge where definitions will probably follow the empirical programmes evolved rather than the other way round. It is, therefore, quite possible to move on the action programmes without spending too much time on perfecting theories.

Two major approach-ways

The educational approaches that can be made to children and youth through population dynamics can be divided into two main streams through the formal educational system of schools and colleges, and through various community channels which influence, instruct or simply communicate with those who totally lack educational opportunities, or are drop-outs, or are adult illiterates. Such channels are numerous though they present many obstacles in the way of effective tapping. They include contacts by social service agencies working for slum-dwellers, or for women and children, or for child welfare (including play centres and milk or supplementary feeding centres), rural development centres, community groups, organised sectors consisting of employees, classes for workers' education and adult education, etc., etc

In fact, I believe that if these channels could be fully utilised some of the need to cover children in primary school classes, might be met, incidentally. One of the reasons for primary classes being so important is that the drop-out rate at this stage of education is very high.

The formal educational system provides a vast, well-defined sector and (once the concerned authorities are convinced) a ready-made opportunity for a well-prepared population education programme The tendency has been, therefore, to concentrate on this sector, where it would also be possible for results to be seen and measured to a far greater degree than the other, out-of-school sector. Nevertheless, it cannot be forgotten that it is the latter that, demographically if not educationally speaking, will provide the ultimate test of success for this programme

For brevity and clarity, it may be useful to set out the different modes of approach in the form of a chart attached to this paper.

Formal education systems

Interesting discussions are taking place through numerous Workshops and Seminars, both international and national as to the strategy for introducing population education into school systems. Educators and those concerned with school administration are, on the whole, preoccupied with curriculum adjustment and teaching techniques within it. In India, for instance, several Workshops have already been held for this exercise, both officially and non-officially.

It is my personal feeling that curricular development of population education is going to be a prolonged exercise before on-going programmes are in full swing ; and that furthermore, while trying to fit population education into a curriculum framework, it might be too easy to lose a certain flexibility of approach which can utilise local situations advantageously, both in the rural and the urban areas Depending upon the kinds of background from which children come, the types and standards of the schools and their material resources, a pliable approach, even curriculum-wise, seems necessary if the underlying aims of population education—to create awareness, understanding and a willingness to change—are to be fulfilled ultimately.

Therefore, it is already time, I believe, to utter a word of warning : that to tie in population education too neatly into school curricula might have the result of children "learning about" the subject as such and not "understanding and changing".

The conclusion is that the curricular approach must be used with imagination, a certain freedom to experiment, and kept adaptable to more localised conditions, so as to relate meaningfully to the daily experience of children coming within its purview.

An area in which flexibility is particularly essential lies in the content of population education. Local adaptions here are a must, for otherwise the reactions roused may be counter-productive. In a previous paper I had suggested a list of all the types of subjects that can fall into a compendious definition of population education, and keeping in mind the cultural and scholastic backgrounds of the young people (and their teachers) in question, the list shows an integrated group of topics, as follows :

(a) Demographic trends, their determinants and consequences.
(b) Social and economic development : trends and facts and figures.
(c) Ecological factors and human population growth.
(d) Social, community and family organisation.
(e) Reproduction in plants, animals and humans.
(f) Family life and inter-personal relationships.
(g) Family size norms as related to the above.
(h) Basic values and the quality of life for human progress.

The curricular approach is very much the preserve of educationists On the other hand, those who have been the initiators, the advocates of population education and the moulders of public (including parental) opinion in its favour are drawn, for the most part, from among those concerned with family planning activities, and demographers, with strong support from those working in allied areas like family life or sex education, conservation and other ecological aspects.

Whilst it is felt that the curricular approach must become the concern chiefly of educators, once they have accepted the underlying concepts of population education and the validity of its introduction into school systems, there is still a very wide scope for programmes of different types, even within the formal education system, for these other groups like family planning workers, ecologists, etc. This scope lies in the extra-curricular approach. This is the line in which the Family Planning Association of India, for instance, is concentrating its efforts as regards the school system.

School syllabi and time-tables vary rather bewilderingly in India from State to State and region-wise, language-wise and according to the classification of the school. One needs to study the local set-up and then it is usually possible to discover that there are opportunities which can be seized for innovative teaching, provided the Principal and teachers are so minded as to encourage them. There are "free periods" and such other provisions within the syllabus, which can be utilised. The FPAI has, by way of a beginning, done some quiet spadework and has won the interest and co-operation of teachers and started some experimental programmes in a number of schools in Bombay and Delhi, and is extending this to other places in the coming months.

Extra-curricular programmes

The extra-curricular approach presents valuable opportunities for evolving and testing out population education materials, tailored to the needs of the particular classes or age-groups Such material can be presented easily in a self-contained form, in terms of contemporary events or problems, and is a more direct approach than the curriculum "infusion" system, though its effects might tend to be ephemeral, if not sustained according to a planned sequence.

The FPAI has found this strategy particularly adaptable with regard to under-graduate and post-graduate students in a project it is carrying out at the Karnatak University where a year-round programme is going on with the approval of the University authorities. The talk-and-discussion method with young University students has proved to be very stimulating and is particularly valuable in that it is gradually encouraging the students to articulate some of the difficulties or blocks they feel in accepting new ideas

Out-of-School education

The second great field of action open to family planning workers and others lies in the approaches to children and youth who are outside the educational system either because they lack the opportunity altogether or because of having to leave school very early.

In the developing countries, this field presents a tremendous and almost overwhelming challenge. As UNESCO has pointed out, while literacy rates are going up in many countries, they are also being faced simultaneously with a rise in the number of illiterates, thanks to high rates of population growth. This is the case in India, for instance, where literacy levels have now reached about 30 per cent of the population, from 16.6 per cent in 1951 The number of school-going children has risen from 23.5 million in 1950-51 to 67 5 million currently, educational facilities having been increased by 300 per cent. But in 1961, there were 36 million more illiterates than in 1951 and in 1966, 20 million more than in 1961, thanks to a rising population, and the number of children still without schooling are at the colossal figure of 63.8 million.

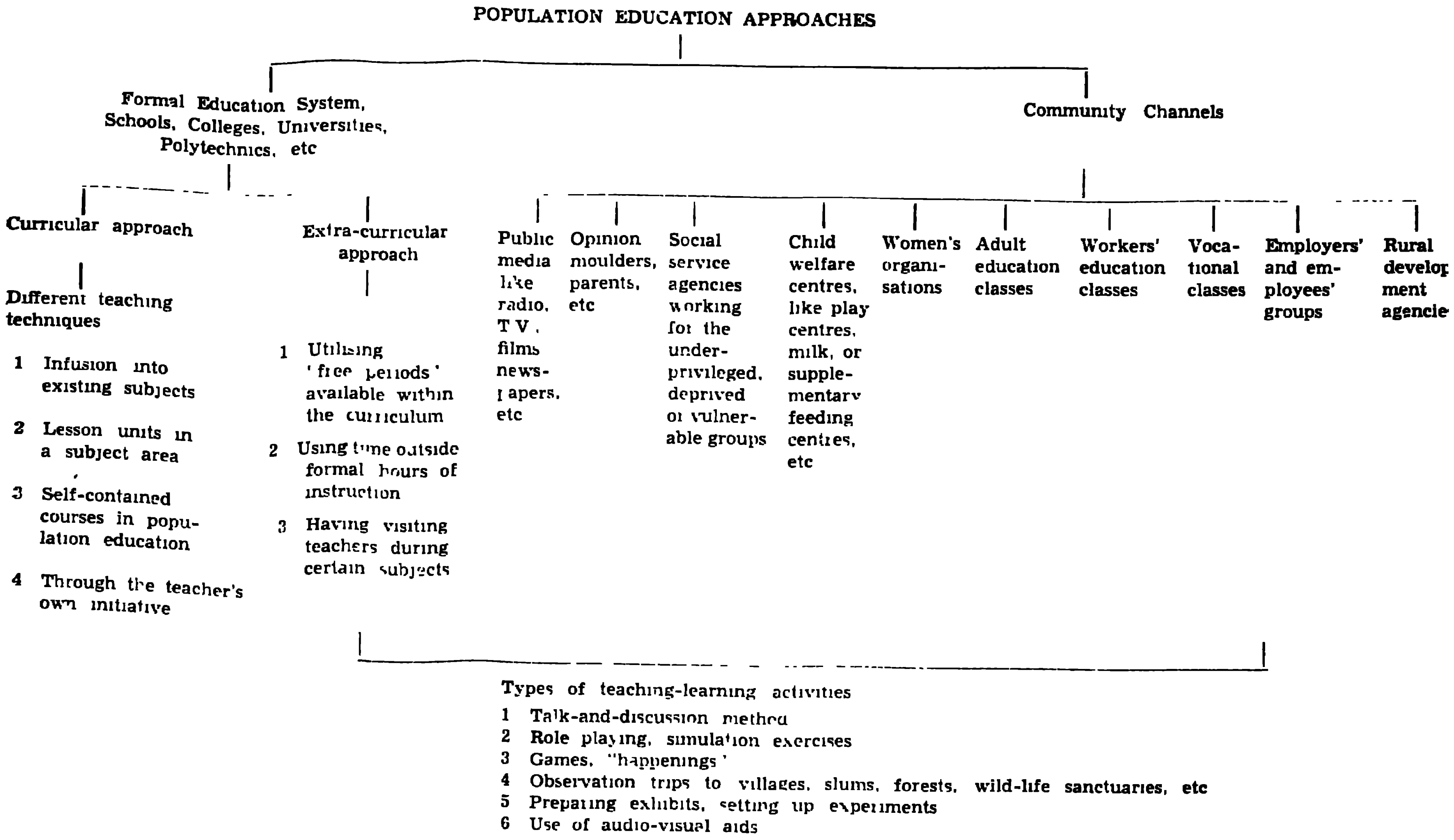
The problems in other developing countries vary in degree, and they too, have substantial sectors of out-of-school children and youth

How to tackle the out-of-school sector poses many problems which are compounded by the fact that most of those belonging to it live in scattered villages where communication—both in physical as well as mental terms—is very tenuous, and where it is the elemental needs of life like food, clothing and shelter that are in the forefront. Nevertheless, some ways and means do exist, and these have to be utilised to the fullest

Community channels

Among the community channels through which young people can be reached, the radio provides a great opportunity for mass dissemination of information, and it is increasingly the case that radio is penetrating the deep countryside even in the developing countries The handicap with radio-broadcasts is, of course, that it provides only a one-way communication. When TV becomes more widespread, the impact will be enhanced enormously Films and other mass media also can be attention-gripping if skilfully used.

On the other hand, it is the personal encounter that is the most persuasive means of change. But this can only be used to the extent that there are agencies dealing with different aspects of social service, community development, and so on In urbanised areas, the network of labour organisations can also be encouraged to undertake population education, especially for the new, young entrants into the labour


POPULATION EDUCATION APPROACHES
Formal Education System, Schools, Colleges, Universities, Polytechnics, etc
Community Channels
Curricular approach
Different teaching techniques
1 Infusion into existing subjects
2 Lesson units in a subject area
3 Self-contained courses in population education
4 Through the teacher's own initiative
Extra-curricular approach
1 Utilising 'free periods' available within the curriculum
2 Using time outside formal hours of instruction
3 Having visiting teachers during certain subjects
Public media like radio, T V, films news-papers, etc
Opinion moulders, parents, etc
Social service agencies working for the under-privileged, deprived or vulnerable groups
Child welfare centres, like play centres, milk, or supplementary feeding centres, etc
Women's organisations
Adult education classes
Workers' education classes
Vocational classes
Employers' and employees' groups
Rural develop ment agencie
Types of teaching-learning activities
1 Talk-and-discussion method
2 Role playing, simulation exercises
3 Games, "happenings"
4 Observation trips to villages, slums, forests, wild-life sanctuaries, etc
5 Preparing exhibits, setting up experiments
6 Use of audio-visual aids

force. In the rural areas, the community development organisations can provide great support to concepts embodied in population education.

Obviously, listing these channels is not even a first step towards action, for before any of them can be brought into use, a great deal of preparation is necessary. The content matter, the personnel required, their training or orientation, and the means of contact and communication have to be worked out in a fairly detailed manner. And not least of all, it is obvious that the results of such population education programmes will depend very much on how realistic they are in terms of what any given group or community perceives as being beneficial for its own advancement.

DECISION-MAKING PATTERNS OF FAMILY PLANNING AMONG HUSBANDS AND WIVES : SOME THEORETICAL ISSUES*

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During the past few years considerable attention has been given by social scientists to the study of the "pattern of decision-making" in the family. For some, the analysis has been prompted by an interest in sociological theory, while others have pursued projects limited in each case to a particular problem. The assumption underlying such research is that differential decision-making patterns may be associated with such variables as the structure of the family, families functioning as organisations, the existing relationship of husband and wife, socio-economic status of the family, future orientation of the family, and so on Despite the fact that such analyses of decision-making have been undertaken and executed, it is evident that the findings and the generalisations derived therefrom are not organised into a general body of theory This is not surprising since in the area of family research several different conceptual frameworks have been employed.

Within social sciences, the decision-making patterns have received greatest attention in the study of deliberation entering into consumer purchases Many of these studies conclude that consumer behaviour is affected by variables which include income, socio-economic characteristics of the household including age and life cycle, financial practices, and attitudes and expectations ** There are other studies which conclude that many purchases of durable goods are planned and thought out carefully in advance.*** Economists have made use of consumer panels to explain the decision process in terms of accumulation of desires for and against making a purchase.*

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* Paper presented at the Annual Meeting of the Population Association of America, Atlanta, Georgia, in April 1972

** The literature on these variables is inexhaustive, but some noteworthy contributions are R Ferber, "Research on Household Behaviour," *American Economic Review*, 52 (March 1962), pp 19-63 , G Katona, *The Powerful Consumer*, New York McGraw-Hill, Inc , 1960 , and Janet Fisher, "Family Life Cycle Analysis on Research on Consumer Behaviour," in L H Clark, ed *The Life Cycle and Consumer Behaviour*, New York Harper & Row, Publishers, 1955, pp 75-102

*** See F T Juster, "Predictions and Consumer Buying Intentions " *American Economic Review*, 50 (May 1960), pp 604-17 R Ferber, "The Role of Planning in Consumer Purchase of Durable Goods," *American Economic Review*, 44 (Dec 1954), pp 854-74 , Eva Mueller, "The Desire for Innovation in Household Goods," in L H Clark, ed *Consumer Behaviour Research on Consumer Reaction*, New York Harper & Row, Publishers 1958, pp 13-37 , and W J Bilkey, "A Psychological Approach to Consumer Behaviour Analysis", *Journal of Marketing*, 18 (July 1953), pp 18-25

Whyte[1] in a very interesting study traces how people through interpersonal contact become interested in purchasing a particular product, neighbourhood communication being a deciding factor for purchase. In his study the importance of the neighbourhood group in motivating people is cited as a key finding

Wolgast[2] has studied the purchasing decision among husbands and wives in conjugal type families Blood and Wolfe[3] with the purpose of providing an understanding of the dynamics of American marriage have sought to identify the factors which determine how husband and wives interact and the effects of varying decision patterns. Kenkel[4], utilising the interactionist concept together with techniques found profitable in the study of small group dynamics, has focussed upon spousal roles and the process of interaction, per se, in family decision-making Foote[5] published a symposium on household decision-making, and hoped that empirical work in this area would be extended to relate economic behaviour to the family phenomena.

Rural sociologists, apart from economists, have also studied decision-making patterns. Among others[6], Wilkening[7] has endeavoured to identify the relationship between varying patterns of decision-making and the adoption of recommended farm practices.

The issue in population and family planning studies

Empirical research regarding decision-making patterns in the area of population and family planning studies have more or less been neglected though some studies have indirectly focussed on decision-making Hill and associates[8] have shown that communication between husband and wife is affected by the wife's feeling of respect for the husband and by her modesty, and that the extent of communication is positively associated with the acceptance of family planning measures among Puerto Rican families.

The Mysore Population Study[9] in analysing the responses on desire for more children, points out that in about two-thirds of such cases, the wife's report on the husband's attitude agreed with her own statement, and about the same proportion of husbands gave accurate estimates of their wives' views *(implying concurrence in decision making)*.

Yaukey and associates[10] have cited the lack of communication among husbands and wives for birth control and family planning adoption in Pakistan. Apart from these three studies in the area of population, the author has not come across any study directly related to decision-making for family planning.

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* J W Clawson, "Family Composition Motivation and Buying Decisions," in N Foote, ed *Household Decision-Making*, New York New York University Press, 1960, pp 200-17

The concept of population control is focussed at present on the developing countries, and we, the demographers, have not made any significant contribution in regard to family decision-making as it is related to adoption of family planning and birth control measures. The study of family decision-making has been considered a worthwhile venture by the professionals, aside from any popular curiosity regarding the identity of the spouse who "wears the pants" in the family. Research analysts from the field of marketing and consumer research, economists and agricultural economists, family sociologists, rural sociologists, social psychologists and child psychologists have all found justification for devoting time and energy to the study of decision-making. Demographers need to turn their interest, toward this vital area, so that we can study the effect of decision-making upon family, fertility, fertility behaviour, and control. We need to find out more about what causes fertility attitudes to change, how needs, incentives and expected outcome affect attitudes and behaviour, and how they are related to the decision-making process This paper has arisen from such an interest, and apart from the theoretical issues explored, one could also read applied aspects in this paper as related to family planning

The problem

An increasing number of studies carried out in the developing nations provide data on fertility values as a basis for determining whether the population already has the small family values which are the object of government policy Both in India and Puerto Rico, research findings indicate that the number of children reported as desired is much less than the number of children actually born. This discrepancy in desired size of the family and actual size of the family has been under considerable discussion and research. For Puerto Rico, Hill and his associates[1] suggest that the discrepancy between values and performance, results from a lag in the development of adequate means for fertility control The inadequacy of means may be either in the facilities and information about family planning or *in the family form inconsistent with the efficient planning of the small family.* In India repeated findings that two to four children are considered desirable by the population appear paradoxical in view of the evidence that every population expressing such desires makes little use of birth control information and supplies when they are made available. Here, too, one possible explanation suggested in some studies is that the very organisations supplying the means of fertility control are inefficient or violate other cultural values. Or to put it succinctly *the traditional family organisation forms are inconsistent with family planning.*

The validity, interrelation and significance of various measures of fertility norms and values are still obscure although there are some studies bearing on this issue. There is a serious lack of knowledge of the circumstances under which an apparent consensus about fertility in a population is simply a cumulative of similar but independent responses to similar life situations and under what circumstances the consensus really has normative force in directing what behaviour ought to be.

An explanation will involve very complex studies involving many aspects of sociology and related disciplines. No single research programme known to this researcher has dealt with all these classes of variables for any country. Anyhow, in this paper an attempt is being made to bring some variables together for theoretical conceptualization.

Variable I—Family organisation:

It is common sociological knowledge that in the developing nations, the pre-dominant family organisation is the consanguine or extended type whereas in the industrial nations, it is the conjugal or nuclear type. If one studies the role-relationships of spouses in each type of family organisation, one finds that among the consanguine family organisation, the spouse role-relationships are 'segregated', whereas, among the conjugal family organisation, they are 'joint'.[11] This distinction is very important in regard to the decision-making process within the family, and resulting fertility differences Rainwater[12] in his study of fertility differences in the United States has employed this distinction. According to him:

Segregated conjugal role-relationships in which the predominant pattern of marital life involves activities of husband and wife that are separate and different but fitted together to form a functioning unit . . . such couples tend to emphasise a formal division of labour in family rather than a solidarity based on interchangeability of role, activities, or the identification and empathy of each with the other's activities and concerns.

Joint conjugal role-relationships in which the predominant pattern of marital life involves activities carried out by the husband and wife together (shared) or the same activity carried out by either partner at different times (interchangeable). . . . In discussing family life (the partners) stress the value—and not just the functional efficacy—of sharing and mutual interpenetration of the concern, understanding and interest of each in what the other does.

If one uses Rainwater's terminology of role-relationship, then *segregated role-relationships* do not create effective decision-making for adoption of family planning.[10] However, on the other hand, the *joint role-relationships* encourage an effective decision-making for adoption of family planning as attitudes given either by husbands or wives are approximately equal in reliability and in fact yield about the same results.[13]

We have very little information on the role-relationships among consanguine or extended family members in the developing nations Since the effective adoption of family planning is dependent upon the decision-making by husband and wife, crucial research is needed in this direction. It seems that an effort should be made to identify the characteristics of the families that are more likely to be adaptable. If decision-making is involved in any choice between alternatives, it is of more than passing interest whether a particular decision-making pattern is characteristic of those families who have shown a certain ability to adapt. The families most efficient in the use of family resources under changing conditions (such as adoption of family planning) are to be characterized by adequate communication and consensus between the spouses.[11] Under the family variable of decision-making the following questions need to be studied: (1) Organisational structure of the family and the decision-making process for efficient adoption of family planning and fertility control. (2) Does the existing organisational structure of the family and lower mortality level still reward a goal of high fertility—in ways that make it irrelevant whether the family is efficiently organised or not to achieve low fertility. (3) Dominance relations in the family may affect fertility because differing familial roles have distinctive interest in reproduction. A recurrent theme in discussions of this issue in developing nations is that the wife has a strong interest in family limitation but lacks the power to implement her interest. For familial units in the developing nations, dominance of husband is described as having the interest and power to maintain (or limit) fertility. (4) In the developing nations, females have been the target for motivation for smaller families. However, the effect of concurrence between husband and wife for birth control would have to be simple additive: two motivated persons together may achieve a longer delay in having the next child and also adopt family planning, and this in turn is related to decision-making. (5) Decision-making about family planning may be affected by a certain sex distribution of the children in the family. Any sex preference can tend to delay the decision-making to produce the desired minimal sex distribution.

While it is true that no country as yet has mounted an efficient all-out campaign to disseminate contraceptive supplies and information, the efforts made in some places have been intensive enough to indicate that the motivation to limit family size is not yet very powerful or is restrained by counter-pressure of some kind. If such education goes beyond an explanation of how contraceptives work, it is likely to involve an attempt to motivate the couples to a new conception of their relationship to each other, and their children. This will involve understanding the decision-making pattern(s) in the family organisation.[14]

Variable II—Social-Psychological: Personality and decision-making:

The consanguine family organisation, with increasing industrialisation, urbanisation, and modernisation, is likely to proceed toward the differentiation of spouse role-relationships. When an attempt concerning the specific variation is made, the predominant view expressed in the literature of the last quarter of a century has tended to regard the differentiation toward the conjugal type of family as almost the only possible direction of change, and also as the most desirable type of family organisation.[15, 16] In the developing nations, even with the ongoing social changes, the patriarchal family continues to hold strong grounds, and is not becoming Herbst's *autonomic family*. This is apparently explained by the social-psychological requirements of traditional roles expected of husbands and wives in traditional societies It may further be related to personality characteristics of husbands and wives and the roles they play in an observed decision-making session.[17]

The personality variable and decision-making can be assessed on a continuum with polar types labelled as "autocratic" and "democratic"[18]. The autocratic role-relationship (as exists in the developing nations) emphasises hierarchical conception, and a sharp differentiation of sex roles The democratic role-relationships emphasise decentralisation of family authority and equality in both husband and wife. These two kinds of role-relationships are the sort of personality variables that would be supposed to have a relationship with how an individual acts in a decision-making issue. Under the circumstances of autocratic role-relationship, the male would strongly prefer to play the task role in decision-making Indeed, the male would find it difficult to do otherwise, even when objectively his wife was equally well prepared to handle this role The personality syndrome of the male in autocratic-consanguine families is that of super-masculinity, rigid sex-role dichotomisation, and stress on hierarchical arrangements For a husband to allow a wife to play the instrumental role, and himself play an expressive role will be defined as weakness, and he would see that the wife responds to his wishes.[19] Allen[20] found that authoritarianism was related to what he terms "anti-feminity in men". This point should remind us that we need many studies of the relationship between ways of thinking and ways of acting, and this can particularly be taken in the context of decision-making for family planning and the personality syndrome of traditional family role-relationships.

Traditionalism

We can make an assumption that family role-relationships may be upset when the husbands and wives fail to perform their traditionally and legally required roles within the family. This assumption, if it is true, will mean a rigid adherence to the conventional values which husbands and wives have internalised during their socialisation process. A tradition-bound personality (whether husband or wife) would find it extremely difficult to deviate from commonly held values, and therefore, there will be traditional role behaviour in family decision-making. The traditional male personality would assert that a wife's place was in the home, and that a husband has to support his family and children, and it is he who decides on vital issues in the family. On the other hand, a traditional wife's duty would be to have children and rear them, and that women should not take an active interest in community, politics or for that matter family planning.[4]

Dichotomisation of sex roles

Among the developing nations, sex roles are dichotomised and there appears to be a great amount of rigidity in these roles. In this dichotomisation of roles, no overlapping of traits is discernible. Under these circumstances, traditional beliefs are supported. These include the beliefs that a wife should obey her husband, that it goes against the traditional value to place women in a position of authority, and that she should not be consulted for decision-making. This concept of male dominance with assertiveness of traditional dichotomisation of roles can be inversely related to adoption of family planning by the females. No research of this nature has come to the attention of this author. Does not, therefore, rigid dichotomisation of sex roles become a vital issue in decision-making for family planning ? Traditionalism and dichotomised sex roles seemed to be discriminating personality dimensions.

Authoritarianism

The concept of authoritarianism in terms of role-relationships is concerned with higher and lower status of levels such as parent-child, husband-wife, leader-follower and so on. This can become a personality measure for decision-making among husbands and wives. A person (husband and wife) scoring high on this measure will want the other to obey the one in authority. The role-relationships will be strongly imbued with concepts of higher and lower status, dominance and submission, and man's place and woman's place in the world generally. Based upon this measure, husbands and wives would be expected to interact differently with their spouse[5], and on this assumption it is possible to assume an inverse relationship between authoritarianism and the decision-making patterns in spousal role-relationships. It is possible to hypothesize that a wife would submit willingly and with docility to the wishes of her husband, either for family planning or birth control or a large family, if the role-relationship were authoritarian. How does this power structure among husbands and wives affect adoption of birth control methods, and their continuous use.[21] Can she take decisions or subsidiary decisions in the task of family planning, if not, what is the pattern of decision-making ?

In the social-psychological factors of decision-making, we have discussed the traditional spouse role-relationships, the dichotomising of sex roles and authoritarianism. All of these factors are interdependent and mutually inclusive. It is apparent that to study these factors, we will have to operationalise our concepts and develop scales to measure them. These scales should explain the roles a husband and wife play in decision-making for family planning. These scales should also measure the differentiation between husbands and wives, and family social organisation. Unriddling of these enigmas is essential for understanding the personality dimension of husbands and wives in regard to decision-making, and its application to the family planning programmes all around the globe. Theoretically, it would have a bearing on how husbands and wives arrive at a decision.

Since, theoretically, decision-making involves alternative ways of making a choice, let us discuss the third and final variable, and, that is of risk-involvement in decision-making between alternatives.

Variable III—Risk involving and decision-making:

In this paper on decision-making patterns for family planning, attention has been paid to family social organisation and social-psychological factors. Since decision-making includes an element of choice, perhaps it is the most deliberate and voluntaristic aspect of social conduct. The argument here is that the study of decision-making would gain by making the contexts of the issues explicit and systematic. Let us take here the issue of family planning. If this issue is new to the decision-makers, it will be handled differently from the one which appears quite familiar. For example the search for information in the former context may be either very extensive or not at all depending upon the situation which will include family social organisation and social psychological factors. The likelihood of getting an appropriate decision (in this case adoption of family planning) would be less if the decision-makers were in doubt with regard to the appropriate values of the issue context. In many cases, we may find hardened attitudes and prepared responses. The chances are that the agency promoting family planning will be less likely to assimilate new information than if they would have proceeded through issue-contexts and their relative benefits to the population involved. The latter idea brings us to the question of risk-involvement.

Decision-making in any issue-context, including family planning, involves alternative risky ventures. It may involve a two-step procedure. Firstly, he chooses an efficient plan among all the available plans, independent of his tastes and preferences.[22, 23] Secondly, he applies his individual preferences to this plan, in order to choose the desired plan.*

Let us take here a particular case of Mr. and Mrs. A. They are told (by government or any other agency) that small families increase the level of living as well as provide numerous other benefits. Decision-making on the part of Mr and Mrs. A involves risk (of using contraceptives, having a small family, changing social norms, etc., etc.), and uncertainty—that of an increased level of living and other numerous benefits. Both of these propositions depend upon more than one probability distribution. Risks and uncertainties of any order may be constructed of these propositions. The proposition of an increased level of living and risk of use of contraceptives are both futuristic and to which no generally accepted probabilities can be attached. What is the probability that the following proposition is true . If you have only two or three children, you will increase your level of living and have a happy family ? It is neither impossible nor certain, therefore, it should have a probability of zero to one, but it is impossible to find out the probability, or even to set up generally acceptable rules. The traditional economic/mathematic notion in such a decision-making situation is that choices would be made to maximise expected values. The expected value (EV) of a given situation of risk and uncertainty can be expressed by multiplying the value of each possible outcome by its probability (p) of occurrence and summing these products across all possible outcomes (s). In symbols, the expected value would be:

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* The classical utility maximization theorists assumed the existence of interpersonally comparable cardinal utility, and therefore in the utility model, the second step considered here is not paid any attention to This step involves values, and values are fluid and are affected by, as well as affect, the decision-making process

$$EV = p_1s_1 + p_2s_2 + p_3s_3 + \dots\dots\dots\dots p_ns_n$$

The assumption that people will behave in this fashion in a risky situation is contradicted by observable behaviour in real life situations. Hundreds and thousands of women in Western nations have unwanted pregnancies each year either because of failure of contraceptives or no use of contraceptives at all at the time of probable conception. In the developing nations, where propaganda machines for family planning are very strong, hundreds and thousands of babies are born each year; people are not willing profit from the free availability of contraceptives when government spends money on these services; people are willing to buy lottery tickets when in fact the lottery makes a profit, and these are examples of risky situations human beings do enter.

Let us consider the decision-making for family planning by a couple as a game, you being the person supposed to be in the instrumental role in their playing this game.[24] You know at any moment in the game, what the moves available to the couple are, but you do not know which one they will choose, and under what circumstances. Since the game of decision-making for family planning shall assume values, and values being fluid, you can assume that the choice will not be completely a random one. The couple, jointly, or husband or wife separately, will make a move designed to minimise the risk and uncertainty. Your goal is similar, and that is: what strategy you should adopt. The determining of these rules and strategy should be an effective way of producing concurrence in decision-making among the husbands and wives, and also in implementing family planning field programmes. It should be emphasised here that the theory of games, though a general concept, can be useful in understanding the decision-making process. Stated another way, decision-making and the acceptance of family planning, both require a joint discussion (or game) and consensus rather than win or lose on the part of husbands or wives. It will be related in turn to the function of cultural values and social structure.[25, 26] Research in this function and theoretical consideration will be very useful. To put the argument of risk involving and decision-making for family planning mathematically, we have to make the following considerations:

DM	Decision-making by a couple or husband or wife.
C_1, C_2, C_3, etc.	For a set of circumstances (family organisation, social-psychological and risk involved)
AC	For the decider to be aware of C
D_1, D_2, D_3, etc.	For the decider to make decision 1, 2, 3, etc.
(1), (2), (3), etc.	For the first, second, third, etc., casual principles (such as increased level of living, happy family, etc., etc.)
A(1), A(2), etc.	For the decider to be aware of (1), (2), etc.

The equation for decision-making can be put as:

$$\begin{aligned} DM &= AC + (D_1, D_2, D_3, \text{etc.}) + [A(1), A(2), \text{etc.}] \\ &= \text{Positive or Negative Decision-Making Response.} \end{aligned}$$

This paper will not go into the subject of statistical decisions and arguments involved here. Suffice it to say that one could derive highly technical equations from this by posing alternatives or choices which are transitive. On could construct stochastic models with such transitive as well as intransitive patterns for decision-making and family planning.

Summary

The paper outlines the necessity of studying decision-making patterns as related to family planning and birth control and takes up theoretical issues. In the conceptual scheme presented, three variables to decision-making have been discussed: (1) family organisation, (2) social-psychological, and (3) risk involved.

With regard to "the family organisation", the distinction of "segregated" and "joint" conjugal role-relationships has been made which is related to the decision-making process in the family. It is argued that the 'segregated' role-relationship, among husbands and wives in existence, in the developing nations perhaps does not provide an effective decision-making pattern for family planning. Variables for possible further research have been suggested.

With regard to "the social-psychological" factors, three intervening variables mutually indecisive have been discussed: (1) traditionalism, (2) dichotomising of sex roles, and (3) authoritarianism. The argument is that with increasing modernisation, the spouse role-relationships have not changed to the conjugal type, and the patriarchal family still holds strong grounds. The role-relationships between the spouses are autocratic and they affect the decision-making patterns. Therefore, the personality syndrome becomes an important issue in decision-making.

With regard to the effect of traditionalism, the spouses find it difficult to deviate from commonly held values. Dichotomisation of sex roles implies male dominance and assertiveness. Authoritarianism implies the higher and lower status level. All of these are related to the decision-making process, and are interdependent and mutually inclusive but need to be operationalised for research.

With regard to the risk involved, the author considers the economic model of maximizing the expected value of an outcome (in this case decision-making for family planning). The author suggests studying it (the decision-making for family planning) as a game theory. Mathematically, the following equation is presented for further consideration.

$$\begin{aligned} DM &= AC + (D_1, D_2, D_3, \text{—etc.}) + [A(1),\ A(2),\ \text{etc.}] \\ &= \text{Positive or Negative Decision-Making Response.} \end{aligned}$$

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PSYCHOSOCIAL FACTORS INFLUENCING FAMILY PLANNING

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Since the inception of the family planning programme in India, many studies have been conducted on the various factors that influence attitudes to family planning. The present study intends to relate two specific factors with family planning viz., family structure and sex-differences among children.

Survey and Sample

The study was designed so as to be comprehensive enough to assess all the socio-economic conditions of the area selected. Family planning formed only a part of this study and as such only data relevant to family planning has been quoted in this paper. The sample consisted of 94 families which form a 60 per cent sample selected at random from the E M. S Colony at Kalamassery, an industrial town in Kerala. The data was collected through personal interviews with the help of an interview schedule.

Socio-economic background of the respondents

Less than 50 per cent of the families were supported by factory workers while the rest were maintained by casual workers. The per capita income of an individual worker was Rs. 1.10; 23 per cent of the workers earned less than Rs. 0.56 per day. Forty per cent of the families lived in hutments and 70 per cent had incurred debts.

Nature and extent of family planning

The data revealed that of the 94 couples, 40 had taken to family planning. Of the 40 couples, as many as 34 (85%) had accepted sterilisation (26 vasectomy acceptors and 8 tubectomy acceptors), ten per cent used Nirodh and the remaining (5%) had adopted the IUD. The high percentage of vasectomy cases may reflect the impact of the mass vasectomy camp held at Ernakulam. The low pereentage of users of Nirodh could be attributed to the lack of supply of the condoms, free of charge, to these low income groups of people.

Forty-six per cent of the couples with less than three children each and 40 per cent with three or more children each, practised family planning. The reasons cited by 54 couples for non-practice were: ignorance (11%), indifference (9%), and religious convictions (19%) ; 51 per cent stated that they did not need it. However, the religious background of any particular section was not found to be a deterring factor. The husbands seemed to be more in favour of family planning than the wives.

Family structure and family planning

It was observed that of the 94 families studied, 78 had one or more dependants* residing with the couple while the remaining 18 had no such dependant. The frequency of acceptance of family planning in these two categories showed that while 16 per cent of the 18 couples who had dependants staying with them practised family planning, as many as 48 per cent of those without any dependants had accepted family planning. The difference in percentage is large enough to indicate a possible relationship between family structure and acceptance of family planning.

Of the 18 couples who had dependants 12 had only one such dependant staying with the family. An analysis of the relationship of these dependants to the couple and its correlation with acceptance of family planning, revealed that among the 12 couples, none of the six who had either parent staying with the family practised family planning. When the dependants were relatives other than the parents, the chances of acceptance were observed to be greater in that 25 per cent of the couples who had either brother or sister, and 50 per cent of those who had other dependant relatives staying with them, practised family planning. Of the remaining six couples with more than one dependant, the relationship was as follows : father and mother ; father and sister ; mother, sister and other ; father, mother and other ; brother and sister ; and sister and other. The analysis also indicated. the rare possibility of family planning being practised among couples staying with aged parents.

It may be concluded that the probability of family planning being practised is somewhat lesser among couples with dependants, as compared to those without. Also, this probability is even more reduced when the dependant is the parent. This does not connote that if family planning is not practised by couples with dependants it is exclusively due to the presence of the latter though this could be a contributory factor, because an aged parent will be only too glad to have more grandchildren. Moreover, their religious beliefs may lead them to advise their children not to go against "the will of God". Also, couples staying with dependants will not find child-rearing a problem as the children can be entrusted to the latter's care. This feeling of security will naturally develop a negative attitude towards family planning among these couples.

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* The term "dependant" refers to any person staying with the couple, whether economically independent or not.

Sex difference among children and family planning

All the 94 respondents had one or more children. Sixty-nine couples had children of both sexes while 25 couples had children of the same sex. A correlation between the sex of the children and acceptance of family planning by the couples showed that fewer couples with children of the same sex, practised family planning as compared to couples with children of both sexes. Fifty-five per cent of the 69 couples who had children of both sexes practised family planning as against 28 per cent of the remaining 25 couples in the sample. This difference was significant enough to indicate a possible relationship between sex difference among children and family planning acceptance.

Further analysis of those couples with children of one sex only revealed that 18 of the 25 couples had male children only and the rest had only female children. The distribution of family planning acceptors among these two categories indicated that fewer couples with male issues only, practised family planning (2 of the 18 couples) while those with only female issues had taken to family planning to a greater extent (3 of the 7 couples).

Conclusion

The study points to the scarce possibility of the practice of family planning among couples with children of the same sex as compared to those with children of both sexes ; the chances being fewer among couples with male children alone as compared to those with female children. This is quite natural because all parents with children of the same sex are eager to have a child of the other sex too to share their love. It must be noted that the respondents belong to a cultural background in which male children are considered to be an asset to the family while female children are regarded as a liability. In such a set-up, it is quite possible that couples with two or more female children do not dare to take another chance and couples with male children alone, do not mind having a female child.

The views expressed in this paper are just interpretations of some factual data. The study is limited in that its scope was not confined to the specific issue of family planning, and the data are drawn from a larger socio-economic study. However, there is sufficient scope for research into the relationship between psychosocial factors and attitudes to family planning.

ROLE PRESCRIPTIONS AND EXTENDED FAMILY PLANNING PROGRAMMES

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Introduction

Role performance is a direct function of the discrepancies between awareness about role prescriptions, assignment of prescribed roles and actions in conformity with the prescribed and assigned role.* The effectiveness of role performance is determined by the degree of association between the awareness of role prescriptions, assignment and action. Inversely, a poor association between these variables would indicate low effectiveness of role performance. Therefore, the main purpose of this paper is to find out the association between role awareness, role assignment and actions by the members of a group in relation to an extended family planning programme.

In formal organisations, the role prescriptions of its members are laid down in advance[1] by a board or experts, and, keeping the organisational objective achievements in view, the roles of different members are prescribed on the assumption that (i) all the required resources within and outside the group are available for role-performance, and, (ii) the members of each group (local unit) of the organisation shall adhere to their prescribed roles without any lapses, whatsoever. However, staff position differences, beliefs, attitudes, skills and capabilities of the members, and, local community differences are bound to affect the above consumptions, and thereby engender stresses and strains in role performance. Hence, the larger the number of units, the greater is the effect on objective achievement provided that liberties are permissible at the local level and the local group leaders are equipped with the skill and capability to incorporate changes keeping the universal character of policy implementation intact. However, the initial sources of information about role prescriptions also influence the degree of conformity. The sources of information may be categorised into :

(i) *Primary sources* : Members of the local units only, who interact in a face-to-face relationship during their role activities.

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* The term "Role Prescription" has been used here exactly in the same sense as in "Role Theory Concepts and Research", Ed Biddle, B J. and Thomas, E. J., John Wiley & Sons Inc., USA, 1966, p 26.

(ii) *Secondary sources*: Officials of the organisation outside and above the local unit level who supervise the members of local units and do not interact with them in a face-to-face relationship.

The chances of conformity are more if the source of information is primary, rather than secondary, since the latter source while describing the prescribed role to the members of local units may not give due consideration to the local situation. Amongst the primary sources the most significant one is the leader of the unit. Whenever a new member joins a group, the group leader is supposed to describe and assign him the prescribed role immediately. The leader's lack of knowledge about the prescribed roles of different members and his indifference or unwillingness to assign the prescribed roles to them, might create a poor image of leadership amongst members, if they discover personally or through secondary sources the significance of those roles about which the leader expresses his ignorance or unwillingness to assign to the group members. In such a case, the concerned members retaliate through indifference or apathy towards some of the conditions of their own roles or even entire roles as such. To find out the relationship between the role incumbents' awareness about their role prescriptions and their leaders' assignment of these prescriptions, the discrepancy between awareness and assignment has been calculated and termed as D1 analysis. In certain cases the indifference or unwillingness on the part of leaders to assign prescribed roles to the members might arise out of lack of conviction in the group goal. In such cases the individuals are drafted into the achievement-roles due to some attribute in the series which they desire[2] The error of choice is discovered by the incumbent only after role occupation.

The above factors become insignificant, if the role incumbents do not get opportunities to perform the assigned role Because, as already referred to, there are chances that the members of a local unit may not get opportunities to perform the assigned role Because, as already referred to, there are chances that the members of a local unit may not get opportunities to undertake activities in accordance with the prescribed and even assigned roles mainly due to organisational and community differences at the local unit level. Therefore, the discrepancy between assignment and action, has also been calculated, and, termed as D2 analysis. Moreover, as cent-per-cent adherence to the role prescriptions is assumed for objective achievement, the discrepancy between the expected and actual role performance has been calculated and termed as D3 analysis. Therefore, D3 is equal to 100 (expected) minus the opportunities to perform the expected role.

The national family planning programme of India, the biggest ever programme of population control launched in the world, has 3,705 urban units and 12,324 rural main units, under State Governments, local bodies, voluntary organisations and other institutions spread in 2,690 towns and 5,67,169 villages covering an area of 3.2 million sq. km. (Ministry of Health and Family Planning, 1970). The Medical Officer is expected to provide leadership to the members of each unit.

Deviations from standard procedures are bound to occur at the level of the local unit in such a huge organisation. The paper attempts to study the magnitude of deviation regarding awareness of role prescriptions, assignment and actions with regard to the prescribed roles of the members of the local units in the Union Territory of Delhi through D1, D2 and D3 analyses as explained above.

The programme was reorganised in 1963[3] to the extended family planning programme, which postulated that the birth rate be brought down to 25 per thousand through the extension approach by offering a cafeteria of family planning methods to the masses. The basic precepts underlying the extended programme are: team work at the local unit level, and community participation/involvement at each stage of programme implementation and accordingly, the structure-functional aspects of the programme are laid down.

The first official document prescribing the roles of various positions in a local unit appeared in May 1966, as a result of deliberations held by experts from all over India, in the workshop organised by the Central Family Planning Institute, New Delhi[4]. For the present study, the roles of Extension Educators or Social Workers, and, Field Workers or Welfare Workers have been considered, as these are the key positions in the local units under the reorganised programme. The same role prescriptions as finalised in the workshop have been taken up, as given below, with minor modifications according to the situation in Delhi.

Role prescriptions for Extension Educators/Social Workers

1. He will plan and organise extension services that will meet area needs and utilise all available resources. This will be done in collaboration with other health staff, community development personnel and staff of other official and non-official agencies.

2. He will assist the Lady Medical Officer in maintaining co-operative productive working relations with formal leaders and with official and non-official agencies.

3. He will supervise the store-keeper-cum-clerk and accountant.

4. He will supervise the family welfare worker and will visit his area.

5. He will attend at least two group meetings each month in each family welfare worker's area.

6. He will be the convenor of monthly meetings of the health staff, and will plan the agenda with the Lady Medical Officer and other staff.

7. He will organise orientation training programmes for staff of official and voluntary agencies and for local leaders. At least one such programme shall be held each month.

8. He will assist the Medical Officer in arranging the IUCD and Vasectomy camps and will see that preparatory and follow-up services are given by male as well as female field workers.

9. He will see that adequate records are kept and that reports required by the District Family Planning Bureau are prepared and submitted promptly.

10. He will supervise the analyses of Survey data, interpret the findings and make educational diagnosis ; he will use the survey findings in programme planning, execution and evaluation.

11. He will organise special events such as planning weeks, children's days, exhibitions, etc.

12. He will assist in the preparation of indigenous educational material.

13. He will assist in the scheduling and arranging of film shows.

14. He will prepare and maintain a map of the facilities, health organisations, services and staff of the area.

15. He will review the reports of Field Workers and discuss these with them during his visits to their areas.

Role prescriptions for Field Workers/Welfare Workers

1. He will collect and record for each *galli*, the data required by the centre for programme planning, development and evaluation.

2. He will keep local leaders, health, welfare, development and other personnel working in the sector, informed of the programme and will elicit their advice and assistance.

3. He will identify and list formal and informal leaders in his area.

4. He will arrange training programmes for leaders and will participate in these.

5. He will prepare a list of target couples (wife 15-44 years with number of children, male and female in each case) for each street as it is taken up in the intensive phase of the programme.

6. He will organise and participate in film shows, exhibitions, mass meetings and other activities of public education and information.

7. He will keep "distributors" supplied with contraceptives and informational material and make visits at required intervals to deliver supplies, check and collect records, and give advice.

8. He will visit local leaders other than depot holders at required intervals, to supply them with informational materials, discuss their work, give advice and assist them in other appropriate ways.

9. He will organise an area family planning committee (health committee) of official and non-official leaders, will attend the committee meetings and give appropriate assistance.

10. He will arrange periodical meetings of local leaders from several nearby *gallies* and *mohallas* for training, exchange of ideas and for giving recognition to their efforts.

11. He will help leaders prepare men for vasectomy and will assist in arrangements and organisation of vasectomy services (female workers for tubectomy and IUCD, and help through wives for vasectomy).

12. He will be in frequent contact with the ANM/female workers in the sector to keep them informed of programme development and to assist in any way possible with their extension work.

13. He will follow up with the men the extension work which the ANM or field workers do with women, and/or see that this follow-up is done by local leaders.

14. He will keep local leaders informed of health services particularly IUCD clinics, vasectomy tubectomy services and appointment of new contraceptive distributors.

15. He will prepare monthly reports for his area.

Out of the fifteen items given above for each male as well as female Extension Educator and Field Worker, eight roles, i.e., 1st to 6th, 8th and 15th are for Extension Educators and, three for Field Workers, i.e., 11th, 12th and 13th, which fulfil the conditions underlying the first precept—"team work"—of the extended family planning programme.

The conditions underlying the second precept, i.e., "Involvement of the Community" are fulfilled by three roles of Extension Educators, i.e., 1st, 2nd, and 7th and twelve roles of Field Workers, i.e., 1st to 4th, 6th to 11th and 13th and 14th. These roles are a set of dependent roles in each case and non-comformity even to one of the roles of each set would affect the performance of other roles of the same set.

The organisational pattern in Delhi is unique in the sense that the programme is under the direct control of the implementing agencies, although it is financed by the Directorate of Family Planning. For programme implementation, the Union Territory has been divided into different zones with one Family Planning Officer in charge of each zone. The structural positions of primary and secondary sources of information about role prescriptions in Delhi are different from those in other States, as given below :

Primary sources

1. Medical Officer
2. Extension Educator

Only these two positions in the local unit possess supervisory powers.

Secondary sources

1. Deputy Director (F. P.)
2. Family Planning Officer
3. Faculty of Regional Family Planning Training Centre
4. Officers of the implementing agency above the local unit level.

The comparative role played by these two categories of sources in initially informing the members of the local unit about their role prescriptions will be analysed, assuming that the Medical Officer being the leader of the Unit should execute these in all situations.

Methodology

Though the study proposed to take up the entire universe of Extension Educators and Field Workers in Delhi, only 70 of the 93 Extension Educators/Social Workers and 70 of the 91 Field Workers/Welfare Workers in position, representing all the implementing agencies in Delhi, could be included in the study. The information was collected personally with the help of a pre-tested and standardised schedule during July-October 1969. Only those personnel were interviewed, who had been on the job for more than one year. The sample worked out as 75.3 per cent Extension Educators and 76.9 per cent Field Workers. The data was converted into percentages and subjected to 'D' analysis, i.e., discrepancy between awareness, assignment and action. For practical purposes, during discussions, qualitative terms were used for various analyses of data, i.e., very high, high, average, low and very low, with an interval of 20 between each category.

Discussion

The data in Table 1 reveals that though awareness regarding all the fifteen role prescriptions was high or very high among Extension Educators, assignment of these prescriptions was high or very high in case of seven prescriptions only. The data further indicated a direct association between assignment and availability of opportunities which was high or very high in case of these seven expectations that showed high or very high assignment. Therefore, D1 and D3 analyses revealed low discrepancy, hence, high or very high actual

TABLE 1

Awareness, assignment and action regarding role-prescriptions with discrepancies by Extension Educators ($N = 70$)

Given role prescriptions (numberwise)	Awareness		Assignment of role by the leader			Availability of opportunity to perform prescribed role		Awareness and assignment	Assignment and opportunities	Expected and actual performance
	Yes	No	Yes	Indifferent	No	Yes	No	D1	D2	D3
1	100.0	—	80.0	10.0	10.0	74.3	25.7	20.0	5.7	25.7
2	100.0	—	80.0	10.0	10.0	77.0	23.0	20.0	3.0	23.0
3	80.0	20.0	17.1	12.8	50.0	10.0	70.0	62.9	7.1	90.0
4	70.0	30.0	12.8	12.8	44.3	10.0	60.0	57.1	2.8	90.0
5	70.0	30.0	24.3	12.8	32.8	15.7	54.3	45.7	8.7	84.3
6	80.0	20.0	35.7	10.0	34.3	30.0	50.0	44.3	5.0	70.0
7	84.3	15.7	37.1	10.0	37.1	32.8	51.4	47.2	4.3	67.1
8	88.6	11.4	55.5	10.0	22.8	50.0	38.6	33.0	5.5	50.0
9	92.8	7.1	70.0	10.0	12.8	62.8	30.0	22.8	7.1	37.1
10	87.0	13.0	40.0	10.0	37.1	40.0	47.0	37.0	—	60.0
11	100.0	—	82.8	10.0	7.1	75.7	24.3	17.1	7.1	24.3
12	100.0	—	64.3	20.0	15.7	64.3	35.7	35.7	—	35.7
13	100.0	—	100.0	—	—	100.0	—	—	—	—
14	100.0	—	87.1	12.8	—	81.4	17.1	12.9	5.7	18.6
15	61.4	38.6	12.8	10.0	38.6	10.0	51.4	48.6	2.8	90.0

performance with regard to these seven role-expectations. The actual performance was low or very low with regard to the other seven expectations which showed high or very high discrepancies in D3 analysis and low or very low rates of assignment and opportunities for the performance of prescribed roles.

As the basis of D3 analysis was the availability of opportunities to perform a prescribed role, it was of interest to know the reason for non-availability of opportunities in case of those expectations which revealed very high or high percentages in D3 analysis, and thereby fell under low performance categories.

The reasons put forward by the Extension Educators for the non-availability of opportunities to perform the 3rd, 4th, 5th, 6th, 7th and 15th expectations, were mainly :

1. Concentration of supervisory powers in the leader of the group.
2. Separated demarcated area for role-performance for each member of the group, which acts as a lacuna in team work amongst the members of the group.
3. Administrative anomalies arising out of the unique pattern of programme implementation in Delhi. One of the implementing agencies, i.e., 'Central Government Health Scheme', does not employ field workers. In case of big hospitals the role-expectations pertaining to field aspects are meaningless as the units working in big hospitals are not allotted field areas.
4. Non-availability of full complement of staff in certain local units.

Among the Field Workers, although awareness was high or very high regarding twelve role prescriptions, yet assignment and availability of opportunities was high or very high in case of only five and four expectations respectively (Table 2). Like Extension Educators, the D3 analysis of Field Workers also indicated high discrepancies, hence, low performance, with regard to seven role-expectations which showed low rates of assignment and opportunities for performance of prescribed roles.

The reasons given by Field Workers for the non-availability of opportunities to perform the 3rd, 4th, 7th, 8th, 9th, 10th, and 12th expectations were mainly.

1. *Insufficient knowledge and skills to perform highly technical jobs :* Most of the respondents were matriculates and below, and it was a very high expectation to them to apply scientific techniques for proper identification of real democratic leadership for the programme, and to arrange training programmes for them.

TABLE 2

Awareness, assignment and action about role-prescriptions with discrepancies by Field Workers (N = 70)

Given role prescriptions (numberwise)	Awareness		Assignment of role by the leader			Availability of opportunity to perform prescribed role		Awareness and assignment	Assignment and opportunities	Expected and actual performance
	No	Yes	Yes	Indifferent	No	Yes	No	D1	D2	D3
1	98.6	1.4	84.3	11.4	2.8	84.3	14.3	14.3	—	15.7
2	84.3	15.7	57.1	11.4	15.7	50.0	34.3	27.2	7.1	50.0
3	74.3	28.7	25.7	11.4	37.1	22.8	51.4	48.7	2.9	77.1
4	57.0	43.0	15.7	7.1	34.7	14.3	42.8	41.3	1.4	85.7
5	93.0	7.0	78.6	7.1	7.1	65.7	27.1	14.4	12.9	34.3
6	100.0	—	81.4	11.4	7.1	81.4	18.6	18.6	—	18.6
7	71.4	28.6	37.1	11.4	22.8	28.5	42.8	34.3	9.4	71.4
8	85.7	14.3	35.7	7.1	42.8	31.4	54.1	50.0	4.3	68.6
9	37.1	62.8	11.4	7.1	18.6	8.6	28.6	25.7	2.9	91.4
10	57.0	43.0	21.4	11.4	24.3	17.0	40.0	45.6	4.4	83.0
11	78.6	21.6	50.0	7.1	21.4	41.4	47.1	28.6	8.6	58.6
12	78.6	21.6	35.7	7.1	35.7	28.6	50.0	42.7	7.1	71.4
13	85.7	14.3	57.1	7.1	21.4	40.0	45.7	28.6	17.1	60.0
14	93.0	7.0	77.1	7.1	8.6	57.1	35.7	15.9	20.0	42.9
15	95.0	4.3	83.0	7.1	5.7	83.0	12.7	12.7	—	17.0

2. *Lack of interest on the part of area leaders:* This might be due to improper identification whereby the respondents might have involved pseudo-democratic leaders who were backed by formal organisations and vested interests to exploit the family planning platform for their own purposes.
3. *Lack of organisational support at the local level to recognise the efforts of the leaders :* Most of the respondents emphasised that their leaders, i.e., the Medical Officers-in-Charge, always displayed indifferent or unwilling attitudes towards such efforts. Even the efforts to involve leaders in the programme were considered a waste of time in their opinion.
4. *Ideological differences among leaders :* This was given as the main reason for the inability to organise the area health committee, so far, by the majority of the respondents.
5. *Separate demarcated areas for each member of the group* was given as the reason for the 12th expectation.

These seven expectations of the Field Workers demand community participation in the programme and team work among members of local units; these are the basic precepts in the extension approach.

The set of dependent prescribed roles in respect of community involvement in the programme included the 1st, 2nd, 6th, 11th, 13th and 14th roles in addition to six out of the seven above-mentioned expectations. The low, very low, and average rates of performance as indicated by D3 analysis in respect of six expectations and high and very high rates of performance in respect of the other six expectations out of a set of twelve dependent role-expectations clearly revealed high inconsistency in the role performances of Field Workers. This also established that activities were undertaken in relation to six out of twelve role-prescriptions which pertain to the "involvement of the community". Activities pertaining to two expectations, the 12th and 13th, and demanding 'team work', another precept of the extension approach, were not undertaken by the majority of the respondents as shown by 71.4 per cent and 60 per cent of discrepancies respectively by D3 analysis. The absence of team work was also confirmed earlier by Extension Educators in giving "separate demarcated areas" for each member of the local unit, as one of the reasons for non-availability of opportunities for role-performance with regard to supervisory roles.

The above analyses thus clearly indicated that the main point of departure from the prescribed role was at the assignment stage. A good number of leaders did not assign the 3rd, 4th, 5th and 15th prescriptions to Extension Educators and the 3rd, 4th, 8th, 9th and

10th to Field Workers. This was evident from D1 analysis which revealed considerable discrepancies between awareness and assignment in respect of these expectations. This lack of willingness or indifference on the part of leaders was a clear indication of their non-conviction of the methodology of group goal achievement. This was confirmed by the fact that many respondents continued occupying their roles for six to twelve months and even more than a year without being informed of about more than fifty per cent of their role-prescriptions pertaining to extension methodology. However, the four role-expectations not assigned to the majority of Extension Educators were status symbols, their privileges to supervise the lower positions, the deprivation of which might have created an imbalance of power within the group and lead to frustration. Looking at this from the point of view of the total unit, the low performance of the Extension Educators in respect of the above prescriptions must have affected the performance of Field Workers and *vice versa,* because inter-role relationships have an intrinsic value in determining the functional stability of the group. Therefore, the performance of different roles in a group is complementary, and accordingly, role-prescriptions for each member were laid down.

The data in Table 3 indicates that secondary sources played a predominant role in informing the respondents initially among almost all the role prescriptions of Extension Educators as well as Field Workers. Training institutions were the main source of information to more than 50 per cent of the Extension Educators and Field Workers with respect to their eleventh and ninth role-expectations, respectively. Looking at the nature of sources of information and assignment of role-prescriptions, a low association was indicated between the secondary sources of information and role-assignment by the leaders. It was found that in respect of the seven role-expectations of Extension Education Educators, i.e., the 3rd, 4th, 5th, 7th, 9th, 10th and 15th and of Field Workers, i.e., 3rd, 4th, 7th, 8th, 9th, 10th and 12th, there was not much difference (nil to 10%) in the assignment of these expectations and the primary sources of information, while as already mentioned, more than half of these respondents belonging to both categories were informed through secondary sources. Considering the differential of nil to ten per cent in assignment and the primary sources of information, it was clear that to the majority of respondents who were informed through secondary sources, these roles were not assigned by their leaders. Because, logically also, the leader would at first assign these prescriptions of which he himself was the source of information. Moreover, on further questioning the majority of the respondents stated that their leaders wished them

TABLE 3

Primary and secondary sources of information about role prescriptions by Extension Educators and Field Workers

Given role prescriptions (numberwise)	EXTENSION EDUCATORS					FIELD WORKERS					
	Primary	Secondary		Self	Total	Primary		Secondary		Self	Total
	Medical Officer	Training	F P O			Medical Officer	Extension Educator	Training	F.P O.		
1.	24.3	58.6	12.8	4.3	100.0	31.4	3.0	50.0	11.4	3.0	98.6
2.	17.1	63.0	15.7	4.3	100.0	17.1	1.4	57.0	7.0	1.4	84.3
3.	14.3	48.6	14.3	2.8	80.0	20.0	1.4	43.0	8.6	1.4	74.3
4.	14.3	48.6	7.1	—	70.0	11.4	—	37.1	7.0	1.4	57.0
5.	24.3	30.0	14.3	1.4	70.0	34.3	1.4	44.3	8.6	4.3	93.0
6.	11.4	61.4	7.1	—	80.0	35.7	1.4	47.1	11.4	4.3	100.0
7.	20.0	43.0	20.0	1.4	84.4	27.0	—	31.4	8.6	4.3	71.4
8.	30.0	45.7	12.8	—	88.6	21.4	2.8	47.1	11.4	2.8	85.7
9.	58.6	30.0	4.3	—	92.9	7.1	1.4	25.7	2.8	—	37.1
10.	30.0	38.6	18.6	—	87.1	11.4	—	37.1	7.1	1.4	57.0
11.	34.3	45.7	20.0	—	100.0	20.0	2.8	45.7	8.6	1.4	78.6
12.	30.0	50.0	20.0	—	100.0	28.6	7.1	35.7	5.7	1.4	78.5
13.	41.4	32.8	25.7	—	100.0	28.6	4.3	43.0	7.1	2.8	85.7
14.	30.0	50.0	20.0	—	100.0	41.5	4 3	35.0	7.1	4.3	93.0
15.	10.0	51.4	—	—	61.4	57.1	7.1	28.6	2.8	—	95.5

F P O = Family Planning Officer.

to undertake only those role-activities of which they themselves were the source of information.

The above analyses clearly confirmed the assumption held earlier, that the chances of adherence to the prescribed role by individual members of local units are greater, if the initial source of information about such a role is primary rather than secondary. It was interesting to find further, that some of the expectations of Extension Educators (1st and 2nd) as well as those of the Field Workers (1st, 2nd, 11th, 13th and 15th) where secondary sources of information did not play a significant role in their assignment, were dependent on those expectations indicating low assignment in which the main source of information was secondary. Therefore, even though the assignment percentages by primary sources was higher in such cases, the virtual performance could not be high, because of their dependence on other expectations indicating a lower performance rate, because of lower assignment and less availability of opportunities.

The analyses of all the data revealed definite trends in low role-performance amongst Extension Educators as well as Field Workers. Although the rate of programme achievement in terms of number of cases covered (Table 4) in Delhi might raise doubts about the above finding, yet the most crucial issue is the methodology through which this was arrived at. The present study left no room for such doubts to arise by revealing the defiance of the two basic precepts of the extension approach—team work and community participation at the local unit level, in accordance of which the roles of every number of the unit were prescribed. Hence, whatever the quantitative achievement made, it was certainly not through the prescribed methodology.

TABLE 4

Percentage achievement of cases covered by sterilisation, IUD, and conventional contraceptives, yearwise

Year	Sterilisations	IUDs	Conventional contraceptives
1966-67	40	21.6	99
1967-68	136	35.1	224
1968-69 (up to Nov. '69)	57	108.6	416

Figures obtained from the Directorate of Family Planning, Delhi Administration, Delhi, 1969

Conclusion

The study established a poor association between awareness, assignment and action in respect of role-prescriptions. The main point of departure was at the assignment and action stage. The prescribed methodology, i.e., the extension approach for the prescribed ways and means of achieving programme objectives had been defied at the Family Welfare Planning Centre and the Primary Health Centre levels by improper application of its basic precepts, viz., team work and community involvement, mainly because of ignorance or lack of conviction in the methodology among leaders of local units.

The study also proved the assumption that primary sources of information, especially the leader, i.e., the medical officer, are more significant initially for assignment of prescribed roles to the members of the unit.

It is suggested that: (1) Leaders of the local units, i.e., medical officers should be trained on a priority basis, especially in extension methodology. (2) Job dissatisfaction among Extension Educators can be removed to a great extent by reinstating the supervisory powers, and assigning the prescribed role without any lapses or reservations on the part of the authorities. (3) The degree of role-conflict especially among female workers can be minimised by either helping them through male workers in performing evening duties or assigning late-hour work to the males only, or providing/ensuring their residence with local units of the jurisdiction. (4) There should be complete assignment of prescribed roles in order to utilise the personnel properly and avoid unwise wastage of man-power. (5) The causes underlying the above discrepancies should be removed since these are the factors in low role performance. (6) There should be periodical assessment of the discrepancies discussed above. (7) Power politics should be avoided at all costs in order to stop the exploitation of field workers by the local unit leaders.

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FACTORS RELATED TO KNOWLEDGE, FAMILY SIZE PREFERENCE AND PRACTICE OF FAMILY PLANNING IN INDIA

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Our family planning programme could be made more realistic if it could be based on an adequate knowledge of the background of the couples. Since the inception of the family planning programme in India, a number of KAP studies inquiring into knowledge about birth control methods, ideal or desired family size and practice of family planning have been carried out, but few of these have attempted to identify the factors related to knowledge, attitude and practice of family planning. Four recent studies which are relevant to the problems and where the correlates of attitudes towards family planning have been discussed, are by Menon[1], Kivlin[2], Balkrishna and Murthy[3], and Pareek and Kothandapani[4]. The study of Pareek and Kothandapani (1969) also attempts to relate family size preferences with a number of variables like caste, ethnicity, occupation and education. One interesting finding is the substantial amount of positive correlation between family size preferences and attitude towards family planning. Those who desire a small family also prefer to use family planning methods and are favourably disposed towards birth control.

This paper is an effort to throw some light on knowledge, attitude towards family size and practice of family planning at a time when the family planning programme in India just started gaining momentum and to investigate systematically the related factors like social group,* education, occupation and age.

This study was conducted in Baroda Taluka, during August 1965 to May 1967, under the auspices of the Statistical Service Unit, Faculty of Science, M. S. University of Baroda. Some findings of this study have been published by the Demographic Research Centre, Baroda.[5]

Methodology

The data for the study were collected by interviewing currently married males in the age group 15-54 and females in the age group

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* In the urban areas, the social groups considered were Gujarati-speaking Hindus, Marathi-speaking Hindus, Sindhi-speaking Hindus, Muslims and Gujarati-speaking backward Hindus. In the rural areas, the social groups considered were Gujarati-speaking upper class Hindus and Gujarati-speaking backward class Hindus.

15-49 in urban and rural areas of Baroda Taluka.

The sampling design for both areas was prepared separately. For the city, sample households from different rationing zones were selected by stratified random sampling with proportional allocation. A sample of 2,520 households was thus selected in the city. On the other hand, in rural Baroda, a two stage sampling method was followed, with the village as the primary unit and the household as the secondary unit. The total number of households thus selected from the rural areas was 1,251.

From the selected households, information on knowledge, attitude and practice of family planning was elicited from 1,219 males and 1,422 females in urban Baroda and 982 males and 975 females in rural Baroda. There were cases where information could be had only from the wife or the husband and the other spouse could either not be contacted or did not give any response for one reason or the other.

Information regarding knowledge of family planning was obtained from a respondent by asking : "Have you heard of any methods, which a husband and/or wife can adopt to postpone pregnancy or stop having children permanently ?", and if, "Yes", "What are the methods which you know ?" If the respondent was able to name the methods, knowledge was established. In response to the question : "How many children of each sex should a couple have for an ideal family ?", the attitude towards the ideal size of the family was obtained.

Data on practice of family planning were collected to identify those couples who had ever practiced by asking the respondent, "Have you and/or your wife (husband) ever used any method of family planning ?" If so, the details of the methods were obtained. At the same time data on practice of family planning were collected to identify couples who were practicing contraception, but were not treated separately for this paper.

In order to investigate the relationship between the selected factors and knowledge, family size preference and practice of family planning, the familiar chi-square (X^2) test of independence in contingency tables was applied. The null hypothesis was that there would be no differences between the groups comprising the factors (social group, education, occupation and age) in the proportion of members who had family planning knowledge, who desired a small family* and who practiced family planning.

For measuring the degree of association in case of contingency tables, Tschuprow's coefficient[3] "T" was calculated in each case where the association was found to be significant.

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* Two to three children including one son

Tschuprow's Coefficient T is defined by :

$$T^2 = \frac{\phi^2}{\sqrt{(s-1)\ (t-1)}}$$

Where Q2=X2/N; N = total number of respondents,
S = number of rows, and t = number of columns

Results and discussion

A distribution of the respondents with reference to knowledge, attitude and practice of family planning for the rural and urban areas of Baroda Taluka (Table 1), revealed that among males, about 77

TABLE 1

Percentage distribution of knowledge, attitude and practice of family planning in urban and rural areas of Baroda taluka, **1965-66**

Family planning	Urban		Rural	
	Males	Females	Males	Females
Knowledge :				
Yes	76.7 (934)	64.1 (911)	71.8 (705)	69.5 (678)
No	25.4 (285)	35.9 (511)	28.1 (277)	30.5 (297)
Total	100.0 (1,219)	100.0 (1,422)	100.0 (982)	100.0 (975)
Attitude toward small family size*				
Favourable	57.8 (704)	60.5 (860)	25.1 (246)	48.2 (470)
Unfavourable	42.2 (515)	39 5 (562)	74.9 (646)	51.8 (505)
Total	100.0 (1,219)	100.0 (1,422)	100.0 (892)	100.0 (975)
Ever practised :				
1. All methods†				
Yes	43.7 (533)	47.9 (681)	30.5 (300)	50.6 (493)
No	56 3 (686)	52.1 (741)	69.5 (682)	49.4 (482)
Total	100.0 (1,219)	100 0 (1,422)	100.0 (982)	100.0 (975)
2. Scientific methods‡				
Yes	12.3 (150)	10.8 (153)	4.0 (39)	4.4 (43)
No	87.7 (1,069)	89.2 (1,269)	96.0 (943)	95.6 (932)
Total	100.0 (1,219)	100.0 (1,422)	100.0 (982)	100.0 (975)

Figures in parentheses indicate the number of respondents

* Two to three children including one son

† Include scientific, unscientific and natural methods of family planning

‡ Modern contraceptive devices including sterilisation

per cent in the urban areas and 72 per cent in the rural areas reported of having heard of family planning methods; whereas 64.1 and 69.5 per cent of women in the urban and rural areas respectively had heard of one or more of the family planning methods This may be due to the fact that a higher proportion of rural women know about the unscientific and natural methods of family planning as compared to urban women, though there are no significant differences between the proportions of urban and rural women who have knowledge of family planning methods. In contrast there was a significant relationship between the proportions of urban and rural males who had such knowledge.

More than fifty per cent of males in the urban areas (57.8%) expressed the opinion of having two to three children with at least one son, while only one fourth of the males in rural areas wanted to have such a family structure. On the other hand, 60.5 per cent of females in urban and 48.2 per cent of females in rural areas were in favour of having two to three children including one son. It is interesting to note that a higher proportion of females showed a favourable attitude towards small family size as compared to the males in both the areas of Baroda Taluka. This may perhaps be due to the fact that women bear the burden of child-bearing and are more aware of the advantages of having a smaller family.

In contrast to their knowledge of family planning, only 43.7 per cent of the males in the urban areas and 30.5 per cent in the rural areas had ever practised family planning. On the other hand, only 47.9 and 50.6 per cent of the females in the urban and rural areas respectively had ever practised it. But amongst the males and females using family planning methods the proportions of those using natural or older methods were very high. One possible explanation for the high proportion of females in the rural areas who practised family planning as compared to the urban females would be that most of the rural females reported the use of natural methods which included nursing the baby for a long time, withdrawal, douches with oil or some home-made herbal solution, rhythm method and abstinence. Only 4.4 per cent of the respondents reported the use of scientific family planning appliances including sterilisation whereas in urban women the corresponding percentage was 10.8.

It is difficult to say how far the former methods were effective in limiting family size. However, one gratifying fact is that these men and women were at least motivated to adopt them. Though there was a gap between knowledge and practice of family planning, this would seem to indicate that the programme had been fairly successful in reaching the majority of the couples since knowledge was high among the sampled population.

This study is mainly concerned with the effects of social group, education, occupation and age on knowledge, family size preference and practice of family planning. The effects of the factors are considered separately.

Effect of social group

As seen in Table 2, the social group of males and females showed a highly significant relationship with knowledge of family planning in both areas of Baroda Taluka. Gujarati-speaking groups had higher proportions with family planning knowledge than the remaining groups. Similarly, knowledge of family planning was high among upper class Hindus as compared to backward class Hindus among rural females.

In contrast, social group did not show a consistent relationship to practice of family planning when all the methods were considered (Table 2), but there was a significant relationship between social group and the proportion of ever users of scientific methods including sterilisation for urban and rural areas, for both males and females.

Social group was found to be significantly associated with attitude towards having a small family in both sexes and areas, except for rural females. It was also evident (Table 2) that the proportion of Muslims who had a favourable attitude to family planning was half of that of Hindu males (Gujarati and Marathi-speaking). Also, among the Muslims, more urban Muslim females had a favourable attitude towards small family size than urban Muslim males. These results thus seem to indicate that religious affiliation has an effect on attitude towards small families.

Effect of education

It is not surprising that the percentage of knowers amongst males and females in the rural as well as in the urban areas increased with education (Table 3)*. The same situation existed with regard to attitude towards small families and practice of family planning among males and females of both areas (Table 3). Both males and females from urban areas had a higher proportion of ever users of scientific family planning devices in all educational categories as compared to rural areas ; excluding the small number of rural females (12) who were educated beyond the secondary level.

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* In an analysis of some data from the tribal belt of Bihar, a state in the north eastern part of India, Pareek and Kothandapani (1969) point out that education does not seem to influence the attitude towards small family size in the non-factory groups (cultivators and urban non-industrial workers).

Percentage distribution of respondents with knowledge, attitude towards family size and practice of family planning by social group in urban and rural areas of Baroda taluka, 1965-66

Social group	Knowledge		Attitude towards having 2 to 3 children including one son‡		Ever practiced			
					All methods		Scientific	
Urban males (N = 1,219) :								
Gujarati (N = 277)	87.7		74.4		48.4		17.0	
Marathi (N = 231) .	78.4		73.2		41.1		10.8	
Muslim (N = 229)	60.3	***	33.6	***	27.9	***	3.9	**
Sindhi (N = 243) ..	83.1		49.8		63.0		20.6	
Backward (N = 239) ..	71.1		54.8		35.4		7.9	
Urban females (N = 1,422) ·								
Gujarati (N = 327)	72.5		71.0		48.3		11.9	
Marathi (N = 292)	59.9		74.3		38.4		7.5	
Muslim (N = 256) ..	55.9	***	52.7	***	47.7	***	5.1	***
Sindhi (N = 286) .	72.0		48.3		62.9		25.9	
Backward (N = 261) ..	57.5		52.9		41.8		1.9	
Rural males (N = 975)† :								
Upper class								
Hindu (N = 609) .	76.9		28.8		31.6		5.3	
Backward class		***		**		ns		**
Hindu (N = 366) .	63.4		19.1		28.7		1.9	
Rural females (N = 968)								
Upper class								
Hindu (N = 604) ..	72.9		50.8		50.0		5.8	
Backward class		**		ns		ns		**
Hindu (N = 364) ..	64.3		43.7		51.6		2.2	

* X2 is significant at 5 per cent level

** X2 is significant at 1 per cent level

*** X2 is significant at 0.1 per cent level

ns = not significant

In this and all following tables the same notation is used for the respective significant levels

† Information on 7 males and 7 females in rural areas is not available

‡ For testing the association with the respective groups, percentage distributions of respondents are classified in three categories, namely, 2 to 3 children including one son, upto 5 children including two sons and one daughter and more than 5 children or indifferent. The same categories are followed for testing the association with other variables

TABLE 3

Percentage distribution of respondents with knowledge, attitude towards family size and practice of family planning by education in urban and rural areas of Baroda taluka, 1965-66

Education	Knowledge		Attitude towards having 2 to 3 children including one son		Ever practiced			
					All methods		Scientific methods	
Urban males (N = 1,148)† .								
Illiterate (N = 219) ..	60.7	***	41.6	***	29.7	***	3.7	***
Primary (N = 571) .	75.3		56.2		43.8		9.1	
Secondary (N = 271)	87.1		65.3		50.2		18.1	
Higher education (N = 87) .	94.2		82.8		60.9		28.7	
Urban females (N = 1,394)† .								
Illiterate (N = 686)	52.5	***	50.6	***	40.5	***	6.3	***
Primary (N = 557) ..	72.9		66.6		51.9		13.5	
Secondary (N = 121)	83.5		80.2		67.8		20.6	
Higher education (N = 30)	90.0		96.7		63.3		23.3	
Rural males (N = 947)‡ :								
Illiterate (N = 365) ..	64.4	***	19.5	***	32.6	ns	1.4	**
Primary (N = 495) .	73.5		26.5		29.5		5.5	
Secondary (N = 87)	91.9		35.6		29.9		8.0	
Rural females (N = 972)‡ :								
Illiterate (N = 744) ..	67.5	*	43.5	***	52.6	*	2.7	***
Primary (N = 216) ..	74.1		62.5		42.6		9.3	
Secondary (N = 12) ..	100.0		75.0		58.3		25.0	

†-Information on 71 males and 28 females in the urban areas was not available
‡ Information on 35 males and 3 females in the rural areas was not available
* X2 is significant at 5 per cent level
** X2 is significant at 1 per cent level
*** X2 is significant at 0 1 per cent level
ns = not significant

TABLE 4

Percentage distribution of respondents with knowledge, attitude towards family size and practice of family planning by occupation in urban and rural areas of Baroda taluka, 1965-66

Occupation	Knowledge	Attitude towards having 2 to 3 children including one son	Ever practised	
			All methods	Scientific methods
Urban males (N = 1,057)† :		50.5	44.5	13.4
Business (N = 344)	73 3	79.1	46 3	17.9
Clerical service (N = 67)	89 6	43.8	34 4	4.2
Labourer (N = 96) ..	61 5 *	***	ns	***
Class IV servant and industrial worker (N = 535)	76.5	56.7	41.9	9.4
Professional (N = 197) .	86.8	74 1	49 2	22.3
Urban females (N = 1,422) ·				
House wife (intramural) (N = 1,300)	64 4 ns	60 4 ns	47.6 ns	11.0 ns
Extramural Service (N = 122)	60.7	60.6	50 8	8.2
Rural males (N = 859)† .				
Farming (N = 414)	73.4	24.4	29.9	5.3
Business and clerical service (N = 98)	82.7 **	35.7 ns	29.6 ns	8.2 *
Field labourer (N = 224) .	63.8	21 9	30.4	0.9
Class IV servant and industrial worker (N = 123)	70.7	22.8	33.3	5.7
Rural females (N = 975) :				
House wife (intramural) (N = 618)	71.8 *	54.7 ***	47.9 *	6.5 ***
Extramural service (N = 357)	65.5	37.3	55.2	0.8

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* Information on 162 urban males and 123 rural males was not available
* X2 is significant at 5 per cent level
** X2 is significant at 1 per cent level
*** X2 is significant at 0 1 per cent level
ns = not significant

Effect of occupation

Table 4 indicates that occupation* is significantly related to knowledge of family planning and the proportion of ever users of scientific family planning devices including sterilisation for urban males, rural males and rural females. However, this relationship was not found to be statistically significant for urban females. Among females, while housewives constituted the major group with family planning knowledge, occupation did not seem to have affected their knowledge to any significant extent. Even among the ever users of modern family planning methods, the higher proportion of knowledgeable females was formed by those who worked inside the home. Among males, professionals and clerical groups showed highest knowledge and use of modern contraceptive devices, while labourers showed the least. As far as attitude was concerned, there were significant differences between occupation and the proportion having a favourable attitude towards small family size only in the case of urban males and rural females.

Effect of age

The age structure of the respondents showed a significant relationship with knowledge of family planning and family size preference except in the case of rural females. The highest proportion with knowledge were in the age groups 15-24 and 25-34; and the lowest in the age groups 35-54 and 35-49, in the case of males and females of both the areas respectively (Table 5). The youngest age group (15-24) had the highest proportion of respondents who were favourably inclined towards the small family ideal while the oldest group had the lowest.

As regards practice of family planning, the age structures of males and females did not show a consistent relationship when the ever users of all methods of family planning were considered. In contrast, age structure of ever users of scientific family planning methods including sterilisation showed a consistent relationship with practice of family planning. The age group 25-34, where the couples already had large families as compared to younger groups, had the highest proportion practising family planning except in the case of rural males. In addition, the age group 15-24 which had higher fertility when compared with the age group 35-49 had the least number of respondents who were practising contraception. Thus the impact of family planning seemed to be felt in the 25-34 age group onwards. Hence the

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* The compositions of the occupational categories for males and females were as follows. (i) Business, (ii) Clerical service, (iii) Labourer, (iv) Class IV Servant (office attendants, ushers, hall porters, etc.) and industrial workers, and (v) Professional (physical scientists, engineers, teachers, physicians and related workers); Female: (i) House-wife (intramural), and (ii) Extramural Service.

TABLE 5

Percentage distribution of respondents with knowledge, attitude towards family size and practice of family planning by age group in urban and rural areas of Baroda taluka, 1965-66

Age group (years)	Knowledge	Attitude towards having 2 to 3 children including one son	Ever practised	
			All methods	Scientific methods
Urban males (N = 1,219)				
15-24 (N = 132)	84.9	71.2	43.2	3.8
25-34 (N = 434)	78.8 **	61.3 ***	48.2 ns	15.9 ***
35-54 (N = 653)	73.5	52.7	40.9	11.6
Urban females (N = 1,422)				
15-23 (N = 403)	60.8	66.0	51.6	7.2
25-34 (N = 533)	72.2 ***	64.4 ***	52.0 ***	14.3 ***
35-49 ((N = 486)	57.8	51.7	40.3	9.9
Rural males (N = 982)				
15-24 (N = 232)	78.9	30.6	31.9	0.4
25-34 (N = 284)	78.9 ***	26.0 *	35.9 ***	4.6 **
35-54 (N = 466)	64.0	21.7	26.6	5.4
Rural males (N = 975)				
15-24 (N = 337)	69.1	51.0	54.3	1.8
25-34 (N = 304)	73.0 ns	48.0 ns	51.6 ns	6.9 **
35-49 (N = 334)	66.8	45.5	45.8	4.8

* X2 is significant at 5 per cent level

** X2 is significant at 1 per cent level

*** X2 is significant at 0.1 per cent level.

ns = not significant

overall impact on fertility was as great as it would have been if the younger group had practised family planning at least at the same rate as the older groups where the fertility potential generally is not as high.

Degree of association

For each respondent, the category of knowledge, attitude and practice of family planning and the associated factors were ranked on the basis of the value of Tschuprow's Coefficient "T" (Table 6).

TABLE 6

Ranks of factors found to be significantly associated with knowledge, attitude and practice of family planning on the basis of the value of 'T'

Family planning	Urban		Rural	
	Males	Females	Males	Females
Knowledge :	S_1,E_2,A_3,O_4	$E_1,\underline{S_2.A_3}$	A_1,E_2,S_3,O_4	S_1,E_2,O_3
Attitude :	S_1,E_2,O_3,A_4	S_1,E_2,A_3	S_1,E_2,A_3	O_1,E_2
Ever practised :				
1. All methods	S_1,E_2	E_1,S_2,A_3	A_1	$\underline{E_1,O_2}$
2. Scientific appliances incl. sterilisation	E_1,S_2,O_3,A_4	S_1,E_2,A_3	$E_1,O_2,\underline{S_3.A_4}$	$O_1,E_2,\underline{S_3,A_4}$

S—Social Group, E—Education, A—Age Group, O—Occupation
Suffix attached to each letter indicates the rank
The underlined factors indicate the same rank

Judging by the magnitude of the association with knowledge, attitude and practice of family planning, social group and education ranked very high among the selected factors in case of urban areas of Baroda Taluka, whereas in the rural areas of Baroda Taluka, the ranking was a little different, though education ranked more or less high. Age ranked very high as one of the important factors influencing knowledge and practice (all methods) of family planning among rural males. Among rural females, along with education, occupation also seemed to be one of the important factors which influenced their attitude towards a small family and practice of family planning.

Summary and Conclusion

The study describes knowledge, family size preference and practice of family planning and identifies the factors related to these variables in urban and rural areas of Baroda Taluka. The main findings were :

1. Though there is a gap between knowledge and practice of family planning, the family planning programme has been fairly successful in reaching the majority of the couples, since knowledge was high among the sampled population.

2. There were significant differences between the proportions of urban and rural males who had knowledge of family planning methods. Similarly, there was a significant difference between the proportions of ever users of scientific family planning methods in urban and rural areas of Baroda Taluka.

3. The social group of males and females showed a highly significant relationship with knowledge of family planning in both areas of Baroda Taluka. Social group was found to be highly associated with attitude towards having a small family in both urban and rural localities, except among rural females. Similarly, there was a significant relationship between social group and the proportion of ever users of scientific methods, including sterilisation.

4. Literate groups had significantly higher family planning knowledge. The same situation existed with regard to family size preference and practice of family planning (scientific methods) among all the males and females of both areas. In fact, more illiterate females than males in both areas were in favour of a small family. It is quite possible that this proportion of females would go up if they were given higher education.

5. Occupation was significantly related to knowledge and practice of family planning (scientific methods) except in the case of urban females. In case of urban males and rural females, occupation seemed to affect attitudes towards small families to a large extent.

6. The youngest age group had the highest proportion of respondents who had knowledge of family planning and a favourable attitude towards a small family while the oldest group had the lowest. The age group 25-34 had the highest proportion practising family planning except in the case of rural males. But the age group 15-24 which had higher fertility as compared to the age group 35-49, had the lowest proportion of acceptors.

In conclusion, though knowledge of family planning was high, practice of family planning (mainly scientific methods) was comparatively low. A decline in the level of fertility may be expected among the Hindu families (specially Sindhi and Gujarati-speaking) and in the 25-34 age group onwards. Since social group and education are the two major factors related to knowledge, family size preference and practice of family planning, the objections of the social groups could perhaps be met by spreading adult education.

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THE ROLE OF AUXILIARY NURSE-MIDWIVES IN FAMILY PLANNING

MISS K. M. A. ANNAPURNA

With her Standard VIII education and two years of training in 'Nursing and Midwifery', an Auxiliary Nurse-Midwife enters the sub-centre of a Primary Health Centre, indirectly taking up at the periphery, the responsibility of the health programmes for nearly 10,000 people in her area. She identifies the eligible couples and helps them to plan their families. Her advice helps the mother to plan for her child's health, and the supervision given by her to the expectant mother during the ante-natal period is a great help to the family and acts as a safeguard for the mother and the child. While taking steps for the protection and promotion of the health of the expectant mother with a view to enable her to deliver a healthy child, the Auxiliary Nurse-Midwife also avails of the opportunity to discuss the optimum family size with her.

Nurse-Midwives in India

According to the Mukherji Committee's pattern of having one Auxiliary Nurse-Midwife (ANM) for every 10,000 people, each Primary Health Centre serving about 80,000 population would require about eight ANMs. The total number of ANMs in position in 1968 in the sub-centres was 21,000. During 1969-70, however. the figure increased to 30,000. With the expansion of training facilities for ANMs, it is estimated that about 60,000 ANMs will be available by the end of the Fourth Five-Year Plan period. There are 332 ANM schools in the country with an admission capacity of 6,000. On an average, 5,500 students have been qualifying every year so far. The requirements for ANMs by the end of the Fourth Plan period will be about 64,000 to man 42,000 sub-centres and 5,427 Primary Health Centres. The number to be planned for will have to be, in fact, somewhat larger in this field on account of the loss of a substantial number of trained ANMs due to marriage and other social factors.

It is expected that by the end of the Fourth Plan period, each State will attain self-sufficiency in providing ANMs except the States of Uttar Pradesh, Bihar and Orissa. Attempts are, however, being made to establish ANM schools in these three States to overcome the shortage and UNICEF assistance is also expected to be made available in this connection. It will therefore be possible to meet the requirements for ANMs by the end of the Fourth Plan period through the existing training facilities and the expansion envisaged as well as by adjusting the regional imbalances which exist at present.

Duties and responsibilities of an ANM

The duties and responsibilities of an Auxiliary Nurse-Midwife as laid down by the Central Government are given below. However, these only constitute guidelines, for she has to fulfil many other requirements in order to carry out her duties effectively, viz., referring mothers to ante-natal and post-natal clinics at the sub-centres for clinical examination, conducting deliveries and giving post-natal care to mothers and babies, helping local Dais to adopt hygienic practices in conducting deliveries and motivating them to adopt fundamental improvements in their traditional techniques of conducting deliveries, giving health talks on child care, nutrition, household sanitation and personal hygiene, and ensuring primary vaccination and immunisation of all the infants in her area.

Apart from these regular duties of health care, family planning work is also a regular aspect of the ANM's work. She provides information and advice about contraceptives and their availability and helps the female residents of her area to elect a mother to act as a depot-holder for making the supply of contraceptives readily available in the locality. Records of vital statistics owe much to the ANM, because she keeps in touch with village registrations and maintains the records of births and deaths at her sub-centre.

The ANM is well-equipped before she sets out on her job

The Auxiliary Nurse-Midwife is directly responsible to the Health Visitor. She is given training in family planning either at the Regional Family Planning Training Centre, by the Central Touring Training Team or by the District Extension Educators. She is guided by the lady District Education Educator of her district, the Mass Education and Information Officer, and the Health Visitor regularly, and by other supervisory staff of the district when necessary.

After she takes over charge at the sub-centre, she prepares her tour programme with the help of the Health Visitor of the Primary Health Centre. The programme is scheduled in such a way that all the cases are properly attended to during her visit to the village. She starts her work by surveying the villages in her area, preparing a village-wise list of targets and eligible couples and maintaining a survey register for each unit of 1,000 population. During the survey she acquaints herself with the village mothers and is gradually accepted as their friend from the health department. She then undertakes the registration of ante-natal and post-natal cases, and also lists the names of unprotected children (those who have not been immunised). While collecting data regarding births and deaths that have occurred during the month, she also collects information relevant to the family planning programme. This includes particulars about couples who have adopted permanent methods of contraception, couples using conventional contraceptives, couples inclined to adopt family planning methods and couples who are resistant to family planning. In addition to these, she also identifies those couples who are in need of treatment for sterility. Her repeated visits to the area make her popular and she gains the confidence of the residents of the village.

As a health educator in the community

During her visits to the village the ANM talks to the mothers about personal hygiene, sanitation, weaning, diet and other matters of interest to them. She educates them in an indirect but in a most effective way, while she brings home to them the significance of family planning and contraceptive methods, the causes of sterility and its treatment. She helps sterility cases by referring them to the Urban Family Planning Clinics for diagnosis and treatment. It is interesting to note that she starts educational and motivational activities simultaneously, through direct and indirect approaches. Consequently, she becomes a family friend and members of the family look up to her for advice in personal matters. Through the help of formal and natural leaders of the community she clears their doubts on family planning methods and advises the couples to adopt one or the other method suitable to them. In the process of education, she also registers cases which are anxious to adopt permanent methods of family planning.

A motivator for camps

When she succeeds in motivating a good number of cases for sterilisation, the ANM approaches the authorities for organising vasectomy and tubectomy camps in the area. Once the date of a camp is fixed, she starts contacting registered cases and approaching new cases through local leaders. It has been observed that camps help future motivation of the people in the area. After the camp, she follows up the discharged cases and her sympathetic attitude thus brings her closer to the family and helps her in gaining the confidence of the community.

The ANM intensifies her educational and motivational activities during the special fortnight celebrations to achieve higher targets. It is interesting to note that during the observance of the Nirodh Fortnight, an ANM prepared target couples mentally for the acceptance of eight pieces of Nirodh. The initiation at the preparatory phase of the Fortnight was later followed up by her during the distribution coverage and the results showed a turnover of about 90 per cent of the target couples.

It need not be over-emphasised that once she builds up rapport in her area, she is not only an acclaimed motivator but also an idol in whom the people repose their faith. While going round the post-operative wards of tubectomy camps for interviews, the author has observed that the patients wish to have the ANM by their side to help them to express themselves freely and frankly.

The activities of the ANM help achieve family planning targets

The target allotted to the Primary Health Centre or sub-centre has to be achieved through the concerted effort of the ANM at the periphery in co-operation with other family planning staff. The ANM assesses her work in terms of sterilisations per thousand population in her area. For this, she rounds up all the adopters in her proforma for target couples, registers the couples who have just stepped in and deletes the names of outgoing couples to obtain the proposed coverage she has to make during the year.

The ANM, thus, serves as the most effective agent in the programme for extension education and mass communication for family planning. It is, however, expedient that care is taken to keep her informed about the latest developments in the programme as also to give her adequate training in family planning. It has been seen that she creates an impact on the people of her area through her individual and group contacts. Since she lives in the community she knows the indigenous communication channels and is able to give clues to counteract rumours, misconceptions and barriers to the programme. She plays a significant role in the field of extension education and forms the peripheral nucleus for family planning and maternity and child welfare services.

ATTITUDES AND PRACTICES OF GRADUATE SCHOOL TEACHERS TOWARDS FAMILY PLANNING

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Introduction

We have adopted family planning as a national policy Our country has neither the physical resources nor the organisational machinery—social, political and economic, to meet the requirements of the growing millions. It has become increasingly important, therefore, to try to understand the variety of factors that influence family growth in India. This paper concerns the attitudes and behaviour that determine the number of children born to graduate teachers of secondary or higher secondary schools of Patna division in the State of Bihar.

Methods and materials

A sample of 207 graduate-teachers having at least five years of continuous service was taken. These teachers belonged to the different secondary or higher secondary schools of Patna division in the state of Bihar. The teachers were individually contacted and were requested to fill up a prepared schedule which contained questions aimed at assessing their attitudes towards family planning. The completed schedules were checked to ascertain whether they contained inconsistent replies. If any such reply was observed, the teacher concerned was contacted again to seek clarification.

Results and discussion:

A majority of the respondents (87 4%) were males. Also, a marital status-wise break up showed that among the male respondents as many as 96.3 per cent were married. The corresponding figure in case of female respondents was 95.2 per cent.

Table 1 gives the sex-wise age distribution of the respondents. The last column of the table gives the means and the standard deviations of the two distributions. A majority of the respondents of both

TABLE 1

Frequency distributions of ages for male and female respondents

Age (years)	22-24	25-27	28-30	31-33	34-36	37-39	40-42	43-45	Total	Mean +S. D.
Sex										
Male	6	41	78	33	11	12	3	2	186	29.97 ±3.98
Female	3	5	5	5	2	—	1	—	21	29.28 ±4.43
Total		46	83	38	13	12			207	

the sexes were between the ages of 25 to 33 years or 83.9 per cent of the male respondents and 71.4 per cent of the female respondents belonged to this age group.

Knowledge about family planning and study of literature concerning it

About 70.5 per cent of the total respondents (irrespective of sex) reported that it was only after marriage that they came to know for the first time, about family planning. This finding is in consonance with the state of sex education which is prevalent in our society. Many of our men and women learn about family planning after marriage. It is hoped that a massive campaign for family planning through advertisements, literature distribution, films, etc., will acquaint a larger proportion of the people with the aims and objects of family planning.

A very small proportion of the respondents was found to be reading family planning literature regularly. The percentage of males and females reading family planning literature regularly were 10.2 and 9.5 respectively. A majority of the male (77.9%) and female (71.4%) respondents read family planning literature either occasionally or rarely. Non-availability of authentic family planning literature at a cheap price might be one of the reasons associated with this observation.

Belief in family planning

The percentage of male and female respondents who believed in family planning were 80.4 and 85.7 respectively. Though the number of female respondents in the sample is quite small (21), a reason may be assigned to this apparent difference in these two percentages. In our society, usually it is the man who bears the economic burden of the family while all the physical trouble associated with the bringing up of the children is borne by the woman. If the number of children

TABLE 2

Analysis of respondents' belief in family planning

Item No.	Items	Male			Female		
		Married	Unmarried	Total	Married	Unmarried	Total
17 (i)	He/she believes in family planning because :						
	(a) India is over populated	55	4	59 (38.8%)	5	-	5 (27.8%)
	(b) Spouse's health will be better	8	-	8 (5.2%)	-	-	-
	(c) Children will get more care	68	1	69 (45.4%)	10	-	10 (55.5%)
	(d) Insufficient income	16	-	16 (10.6%)	3	-	3 (16.7%)
17 (ii)	He/she does not believe in family planning because :						
	(a) Methods of contraception are bad for health	15	-	15 (44.1%)	2	-	2 (66.7%)
	(b) Contraception is prohibited by religion	13	-	13 (38.2%)	-	1	1 (33.3%)
	(c) Contraception is a shameful thing to be discussed with a doctor	2	-	2 (5.9%)	-	-	-
	(d) Any other reason	4	-	4 (11.8%)	-	-	-

is large, the female partner suffers a lot physically, and this tends to make her more family planning-minded.

The number and percentages of respondents who were in favour of and against family planning are tabulated in the Table 2. In case of male respondents the four most important reasons for believing in family plannng ranked according to percentage preferences are: (i) greater care to children, (ii) overpopulation in the country, (iii) insufficient income, and (iv) spouse's health. Female respondents had the same first three preferences as those of males. However, none of them advocated family planning on the grounds of spouse's health.

A study of replies given by male respondents who did not believe in family planning reveals that the four most important reasons for not believing in family planning according to percentage preferences are: (i) fear of injury to health, (ii) prohibited by religion, (ii) miscellaneous reasons, and (iv) a shameful thing to be discussed with a doctor. Female respondents had only two reasons for not believing in famly planning and shared the first two preferences with men.

Family planning in practice

For the success of the family planning programme only a belief in family planning is not enough. The individuals should get acquainted with the methods of contraception as well. Also, only a knowledge of the different types of contraceptives is useless unless it is put into practice. It was therefore of interest to examine the behaviour of our respondents in this respect.

It was seen that only 29.8 per cent of the married male respondents and 35 per cent of the married female respondents could mention some methods of contraception. This is in sharp contrast with the percentage of 81.2 married male and 90.0 married female respondents who believed in family planning. Such a poor knowledge of an educated section of society is surprising indeed. Perhaps this is due to the non-availability of family planning literature or weakness of family planning propaganda.

The table below gives the ranking order of the different methods of contraception when they were ranked according to the number of male respondents who knew them.

Methods of contraception	Condom	Unscientific	IUCD	Oral contraceptives	Vasectomy	Jelly
Ranking order	1	2	3	4	5	6

A study of Table 3 reveals that only 21 per cent of the married male respondents reported to have practised any method of contraception at one time or the other. This means that some of those who were acquainted with methods of family planning failed to adopt them in practice. It is unfortunate that the importance of regularity in practising any artificial method of contraception was not realised by the acceptors.

TABLE 3

Practical adoption of the different family planning methods by married respondents

Item No.	Items	Male	Female
19.	(a) He/she always practices some method of contraception ..	Nil	Nil
	(b) He/she often practises some method of contraception ..	38 (21%)	5 (25%)
	(c) He/she never practises any method of contraception ..	143 (79%)	15 (75%)
20.	The methods of contraception which he/she most frequently uses is:		
	Condom	24	—
	Jelly	1	—
	Oral tablets	8	1
	IUCD	2	1
	Vasectomy	3	—
	Tubectomy	—	3

The ranking of different artificial methods of contraception according to the frequencies with which they were used by married males is given below:

Methods of contraception	Condom	Jelly	Oral contraceptives	IUCD	Vasectomy
Ranking order	1	5	2	4	3

Because of the small number of observations in this study no ranking order of contraceptives has been suggested for the female respondents.

Actually possessed versus *desired number of children*

The opinion of the respondents regarding the desired number of children was compared with the actual number of children they possessed.

It was observed that opinion regarding the desired number of children varied from an extreme of no children to the other extreme of unlimited number of children.

Table 4 gives the percentage distribution of the number of children actually possessed and the desired number for both married male and married female respondents. An examination of the table reveals that while 70.7 per cent of the male respondents possessed 1 to 3 children, 77.7 per cent desired to possess 1 to 3 children. Also, 19.9 per cent of the male respondents possessed more than 3 children and 19.4 per cent of them opined for more than 3 children. This closeness between the last two percentages is perhaps due to the fact that those who possess a greater number of children think it inauspicious to desire for lesser number of children.

TABLE 4

Percentage distribution of the actually possessed and the desired number of children

Number of	Male		Female	
	% of respondents possessing children	% of respondents desiring children	% of respondents possessing children	% of respondents desiring children
0	9.39	2.76	10	5
1	17.12	1.65	25	10
2	26 53	17.68	25	10
3	27.07	58.56	20	70
4	11.60	7.73	20	5
5	4.97	3.88	—	—
6	2.76	1.12	—	—
7	0.56	—	—	—
Unlimited	—	6.62	—	—
Total	100	100	100	100

A majority (58.6%) of the respondents were in favour of having three children. It seems that our respondents were in agreement with the previous family planning slogan of having two or three children only. The latest slogan of having two children only has yet to show its impact. Perhaps the impact of the latter slogan can be validly judged after sometime. It is interesting to note that most of the respondents of both sexes did not like being childless.

It was seen that the respondents had a great bias for male children. A rate of bias in favour of male children was defined as follows: Let

$M_D(F_D)$ and $M_P(F_P)$ denote the desired and possessed number of male (female) children respectively. Let B_P and D_B denote the rates of bias in favour of male children in the distribution of the actually possessed and the desired number of children respectively.

$$\text{Then} \quad B_P = \frac{M_P - F_P}{M_P + F_P} \times 1000$$

$$\text{and} \quad B_D = \frac{M_D - F_D}{M_D + F_D} \times 1000$$

In our case $B_P = 41.5$ and $B_D = 200.8$

This means that though our respondents on the whole had male children in a greater proportion they were not satisfied with that They wanted a still higher proportion of male children. This desire for male children produces a dampening effect on the success of the family planning programme. The authorities responsible for the programmes should try to eliminate this bias from the public mind.

TABLE 5

Bivariate frequency distribution of the actually possessed number of children (P) and the desired number of children (D)

P/D	0	1	2	3	4	5	6	Total
0	4	1	3	7	1	—	—	16
1	1	2	5	18	—	—	—	26
2	—	—	22	25	1	—	—	48
3	—	—	1	40	2	3	—	46
4	—	—	1	10	9	—	—	20
5	—	—	—	4	1	4	—	9
6	—	—	—	2	—	—	2	4
Total	5	3	32	106	14	7	2	169

N B.: This table was prepared on the basis of the replies of married male respondents only (except those who desired unlimited number of children)

Eliminating such male respondents who desired unlimited number of children from the analysis a bivariate table (Table 5) was constructed. Simple calculations from this table showed that male respondents, on the average, possessed $\bar{P} = 2.42$ children and desired for $\bar{D} = 2.89$ children with a standard deviation of 0.93 children.

The correlation between the desired and possessed number of children was found to be $r_{DP} = 0.574$ which was statistically significant even at the 1 per cent level of significance. The two lines of regression were $D = 1.968 + 0.381\ P$ and $P = O\ 0.859D - 0.07$. The two correlation ratios were $n^2\ PD = 0.34$ and $n^2DP = 0.33$ and from appropriate statistical tests we may say that the assumption of the linearity of regression is tenable in this case.

Our latest family planning policy is to have on the average $\mu = 2$ children. A test of significance was made to see if the average number of children actually possessed and the average number of children desired were significantly different from this hypothetical average. The calculated "t" values in the two cases were found to be 3.9 and 12.44 respectively. This means that the actual and the desired averages of the number of children differ significantly from the family planning target of two children. However when $\bar{P}$ and $\bar{D}$ were tested for significant differences from the previous family planning target of three children, it was found that while $\bar{P}$ differed significantly from the hypothetical mean $\mu = 3$, $\bar{D}$ did not show significant difference. $\bar{D}$ and $\bar{P}$ between themselves were found to be significantly different even at a 1 per cent level of significance.

In our attempt to measure attitudes towards family planning, we defined two indices. The first index was the family planning quotient (abbreviated as F.P.Q.), given by $h = \frac{D-2}{2}$. This ratio lies in the interval $[1 - 1]$ when the desired number of children ranges between 0 and 4. The group of respondents under consideration may be regarded more or less family planning-minded according as the value of "h" is negative or positive.

The expression for the standard error of "h" is given by $S.E.(h) = \frac{\sigma D}{2\sqrt{n}}$ where n is the sample size and σD is the standard deviation of the distribution of the desired number of children in the population. In actual computation, σ_D may be replaced by S_D — the estimated standard deviation. In our case $h = 0.44$ and $SE(h) = 0.035$.

The second index which was termed as "children saturation index" (C S.I.) was designed to measure whether the group of persons under observation had attained a saturation point with respect to the desired number of children. The index was defined as $i = \bar{P}/\bar{D}$. It becomes unity when $\bar{D} = \bar{P}$. We then say that the group is saturated with respect to the desired number of children. In case "i" is greater than one the group may be regarded as oversaturated with respect to the desired number of children while a value of "i" below one, indicates that the group is undersaturated. The standard error of "i" can be easily obtained by the process of logarithmic differentiation. We have to remember that D and P have been found to be correlated and therefore this is a problem of bivariate sampling Also in case of bivariate sampling Cov $(\bar{D}\ \bar{P}) = \frac{\mu_{DP}}{n}$ where μ_{DP} denotes the covariance between D and P. Bearing these points in mind the sampling variance of "i" is at once seen to be given by :

$$v\ (i) = \frac{I^2}{n}\left[\frac{\sigma D^2}{\mu_D^2} + \frac{\sigma P^2}{\mu_P^2} - \frac{2\ \mathrm{cov}\ (DP)}{\mu_D\ \mu_P}\right]$$

$$\frac{I^2}{n}\left[V_D^{\ 2} + V_P^{\ 2} - 2\,\gamma\,DP\ V_D\ V_P\right]$$

where V_D and V_P denote the co-efficients of variation in the population distribution of the desired and actually possessed number of children respectively $I = \frac{\mu_P}{\mu_D}$ stands for the population counterpart of i

In our case i = 0.84 and SE (i) = 0.043

This means that being comparatively younger, our respondents had not attained the children saturation point with respect to the desired number of children

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FERTILITY PERFORMANCE AND FEMALE AGE AT MARRIAGE

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Introduction

In India, the population problem which is immense requires to be attacked with several weapons and reliance on a single method of population control may not prove effective. Besides the conventional contraceptives, sterilisation operations, irntrauterine devices and oral contraceptives have been pressed into service, and the effectiveness of each of these methods in the various family planning projects in India is being examined Another quite different approach, now under active consideration, is to raise the age at marriage of girls by legislation. This was mooted on the belief that the reduction of the reproductive span within marriage by a few years would bring down the birth rate from the current level. An attempt has been made in this paper to test this hypothesis.

Materials and methods

The data for the present study was drawn from the data collected for the Standard Fertility Surveys under three projects of the Family Planning Research Unit of the Indian Statistical Institute, Calcutta, to examine whether fertility performance is concomitant with the age at marriage of girls. The projects and surveys from which the present material was taken were :

(i) Project I : ISI-Jadavpur Institutional study : F. P. Benchmark Survey, 1962-63, (ii) Project II : Growth of Family Size, Calcutta City : Third Resurvey, 1967, and (iii) Project III : Fertility Studies, Hooghly : Second Survey, 1967-68.

All the ever-married employees of the ISI and the three South Calcutta Government Institutions formed the sample of enquiry under the first project (*vide* Technical paper Nos. 2 and 7 of F.P.R.U.). The residential 'active' couples (wives in the age-group 15-45) from several sub-areas in North Calcutta were enumerated completely in the second project (*vide* Technical paper No. 12 of F.P.R.U.). In the third project, however, a probability sample of about 4000 'active' couples (wives in the age-group 15-50) was selected from both rural and urban areas of the district of Hooghly (*vide* Technical paper Nos. 13 and 14 of F.P.R.U.). For the purpose of the present study, however, only a sample of the above studies was chosen randomly as detailed below.

Projects	No. of couples in the original sample	No. of couples in the present sample	Per cent of present sample
I	1,821	1,243	68.3
II	2,533	600	23.7
III (rural only)	2,656 (71 villages)	536 (15 villages)	20.2

The covariation between the variables under review was thus studied with reference to the institutional, urban and rural population groups under the above three projects. It may be pointed out that the data at our disposal did not permit a study of the fertility performance at different stages of the reproductive period of a cohort of women married at a particular age, or a study of completed fertility of all the women in the sample. In this paper, on the other hand, the average number of live-births of several groups of women each having a specified marriage duration has been observed at each age at marriage. For the institutional population, however, it was also possible to study intervals since marriage of live-births of a specified order.

Demographic and socio-economic composition

A brief description of the population groups studied has been given below in relation to a few demographic and socio-economic variables for explaining fertility differentials among these groups.

TABLE 1

Distribution by age

Present age of the female spouse (years)	POPULATION GROUPS					
	Institutional		Urban		Rural	
	No	(%)	No	(%)	No	(%)
15-19	93	7.5	2	0.3	52	9.7
20-24	235	18.9	56	9.4	136	25 4
25-29	329	26.5	137	22.9	121	22.5
30-34	299	24.0	152	25.3	101	18.8
35-39	190	15.3	149	24.8	57	10.7
40-44	83	6.7	83	13.8	41	7.6
45 +	14	1.1	21	3.5	28	5.3
All	1,243	100.0	600	100 0	536	100.0
Median age	28.6		32.8		27.6	

Age of wife: An age-wise distribution of the women in the three population groups, on a comparative basis, has been given in Table 1.

The age distribution of the three groups had the following notable features:

(i) Unlike the institutional and rural sample, the proportion of women below 20 in the urban sample was negligible.

(ii) Wives below 30 years of age accounted for more than 50 per cent in the institutional and rural groups, whereas in the urban sample, only one third of the wives were under 30.

(iii) Women completing 35 years or more (age of declining fertility) had a greater representation in the urban sample as compared to the other two samples.

Marital age of wife: The distributions of women by age at consummation for the three samples are shown in Table 2.

TABLE 2

Distribution of women by age at consummation

Age of wife at consummation (years)	POPULATION GROUPS Institutional No	(%)	Urban No.	(%)	Rural No	(%)
12	45	3.6	92	15.3	115	21.4
13	82	6.6	43	7.2	46	8.6
14	149	12.0	46	7.7	74	13.8
15	180	14.5	73	12.2	101	18.8
16	179	14.4	55	9.2	66	12.3
17	105	8.5	56	9.3	50	9.3
18	110	8.8	53	8.8	26	4.9
19	83	6.7	34	5.6	30	5.6
20	68	5.5	48	8.0	11	2.0
21	60	4.8	26	4.3	7	1.3
22	55	4.4	19	3.2	5	1.0
23	29	2.3	21	3.5	2	0.4
24	29	2.3	9	1.5	3	0.6
25	23	1.9	10	1.7	—	—
26 +	46	3.7	15	2.5	—	—
All	1,243	100.0	600	100.0	536	100.0
Median age	16		16		15	

The women started cohabitation before attaining the age of 15 years in 22, 30 and 44 per cent of cases in the institutional, urban and rural samples respectively. About 53 per cent of the women belonging to the institutional group, 45 per cent of the urban and 51 per cent of the rural women started living with their husbands between 15 and

19 years of age. Effective marriage started at the age of 20 or later for about 25, 25 and 5 per cent of the women in the three population groups respectively.

Educational levels of the spouses : The educational attainments of the husbands and wives have been depicted in Table 3.

TABLE 3

Distribution of couples by educational levels of husband and wife

Educational level of husband	Educational level of wife					
	Illiterate	School	College	Graduate & above	Unspecified	All
			(i) *Institutional*			
Illiterate	3.5 (44)	0.8 (9)	-	-	-	4.3 (53)
School	20.8(259)	32.4(402)	1.5 (19)	-	-	54.7 (680)
College	0.6 (7)	17.0(211)	2.3 (27)	0 8(10)	0.7(10)	21.3 (265)
Graduate & above	-	8.1(102)	6.3 (78)	5.2(64)	-	19.6 (244)
Unspecified	-	-	-	-	0.1 (1)	0.1 (1)
All	24.9(310)	58.3(724)	10.0(124)	6.0(74)	0.8(11)	100.0(1243)
			(ii) *Urban*			
Illiterate	5.3 (32)	-	-	-	-	5.3 (32)
School	12.0 (72)	52.6(316)	0.3 (2)	0.2 (1)	-	65.1(391)
College	-	10.2 (61)	0.7 (4)	0.2 (1)	-	11 1 (66)
Graduate & above	0.2 (1)	15.0 (90)	1.0 (6)	2.3(14)	-	18.5(111)
All	17.5(105)	77.8(467)	2.0(12)	2.7(16)	-	100.0(600)
			(iii) *Rural*			
Illiterate	42 2(226)	1.3 (7)	-	-	-	43.5 (233)
School	28.3(152)	28.2(151)	-	-	-	65 5 (303)
All	70.5(378)	29.5(158)	-	-	-	100 0(536)

Figures in parentheses represent the number of couples.

Both the spouses were illiterate in 42.2 per cent of the rural sample. The corresponding figure was only 3.5 per cent in the institutional and 5.3 per cent in the urban sample. Illiteracy among the wives was, however, several times higher than among husbands in all three groups. In general, rural couples were usually illiterate, whereas the couples belonging to the other centres had had, on the average, a school education.

Economic particulars : Table 4 shows the distribution of couples by occupational status of husband and household expenditure.

TABLE 4

Distribution of couples by occupational status of husband and household expenditure

Occupational status of husband	Monthly per capita household expenditure (In Rupees) Upto 20	21-50	51-100	101 +	All
		(i) *Institution*			
Menials. skilled & unskilled workers	12.7 (158)	21.6 (268)	1.8 (23)	0.1 (1)	36.2 (450)
Clerks & related jobs	1.7 (21)	25.7 (320)	15.8 (196)	4.0 (50)	47.2 (587)
Officers, supervisors, etc	—	1.9 (24)	5.7 (70)	8.6 (107)	16.2 (201)
Other gainful, work	—	—	0.1 (1)	0.3 (4)	0.4 (5)
All	14.4 (179)	49.2 (612)	23 4 (290)	13.0 (162)	100.0 (1243)
		(ii) *Urban*			
Menials, skilled & unskilled workers	4.8 (29)	6.9 (41)	0.8 (5)	—	12.5 (75)
Clerks & related jobs	5 1 (31)	17.5 (105)	7.5 (45)	1.2 (7)	31.3 (188)
Officers, supervisors, etc	0.6 (3)	4.6 (28)	8.0 (48)	2.3 (14)	15.5 (93)
Other gainful, work	6.3 (38)	18.9 (110)	9 8 (57)	2.2 (13)	37.2 (223)
Non-gainful work	1.0 (6)	1.7 (10)	0.8 (5)	—	3.5 (21)
All	17.8 (107)	49.6 (294)	26.9 (160)	5.7 (34)	100.0 (600)
		(iii) *Rural*			
Menials, skilled & unskilled workers	22.8 (122)	18.7 (100)	0.4 (2)	—	41.9 (224)
Clerks & related jobs	1.7 (9)	7.4 (40)	1.1 (6)	—	10.2 (55)
Officers, supervisors, etc.	—	0.2 (1)	0.2 (1)	—	0.4 (2)
Cultivators	11.8 (63)	18.7 (100)	2.2 (12)	—	32.7 (175)
Petty trade and vendors	2.4 (13)	5.0 (27)	—	—	7.4 (40)
Business	0.2 (1)	2.2 (12)	0.6 (3)	—	3.0 (16)
Other gainful, work	1.1 (6)	0.9 (5)	—	—	2.0 (11)
Non-gainful work	1.6 (9)	0.4 (2)	0.4 (2)	—	2.4 (13)
All	41.6 (223)	53.5 (287)	4.9 (26)	—	100.0 (536)

Figures in parentheses represent the number of couples.

The employees constituting the sample couples were mainly middle grade and manual workers with a per capita expenditure of Rs. 21.50. Besides salaried jobs, quite a good proportion of the urban husbands were engaged in other multifarious occupations and had similar expenditure levels as the institutional employees. About 42 per cent of the couples in the villages belonged to households with a per capita expenditure of less than or equal to Rs. 20. The husbands were mainly menial workers and cultivators.

General characteristics of the population groups

The present investigation involved three different types of populations in order to make the results meaningful and applicable to all situations. Besides the above data, the general characteristics of each of these population groups were as follows:

Institutional sample (all employees)

The median ages of the wives at the time of the survey and at effective marriage were 28.6 and 16.0 years respectively. Thus the couples had spent, on an average, about 13 years of married life. About one-third of the couples (both the spouses) had school standard education. Six per cent of the wives and about 20 per cent of the husbands were at least graduates, while they were both so qualified in 5.2 per cent of the cases. Middle range workers (Class III jobs) formed the largest single professional group followed by manual workers who accounted for more than 36 per cent of the sample. The model group of household expenditure was Rs. 21-50.

Urban sample (general city population)

Like the above group, the wives started living with their husbands at the average age of 16 years, but were older (32.8) than the former group. In more than 50 per cent of the cases, the spouses had had school education. The husbands were graduates or above and more than 18 per cent of the cases had received post-graduate education. A good proportion (about 37%) of the male spouses were engaged in non-salaried, gainful jobs. About half the couples belonged to households with a monthly per capita expenditure of Rs. 21-50.

Rural sample (general population of villages)

The average ages of the wives was 27.6 years at the time of the survey and that at effective marriage was 15, the average married life being about 13 years. The extent of illiteracy among the spouses (both) was as high as 42 per cent or so, while 70 per cent of the wives were illiterate. The major occupations were cultivation and

TABLE 5

Average birth interval since marriage by age of wife (institutional sample) at consummation and order of live birth

n = no. of women i = average interval

Age of wife at consummation (years)		ORDER OF LIVE BIRTH											
		1	2	3	4	5	6	7	8	9	10	11	12
12	n	39	33	27	17	10	2	1	1	1	1	1	1
	i	64.8	107.4	147.1	180.1	202.6	205.0	181.0	210.0	232.0	256.0	274.0	292.0
13	n	74	66	56	46	35	23	10	3	2	1	—	—
	i	46.1	86.5	117.8	153.1	182.2	195.0	219.5	206.3	211.0	242.0	—	—
14	n	134	118	96	72	63	40	20	12	4	2	2	1
	i	42.1	77.6	112.0	136.9	166.0	195.9	203 6	209.6	234.8	263.0	298.5	306.0
15	n	162	149	118	86	60	38	20	11	3	—	—	—
	i	30.5	63.5	96.6	124.6	153.8	184.2	207.9	224.9	223.7	—	—	—
16	n	166	139	101	80	49	23	17	10	7	3	2	2
	i	31.0	66.3	96.2	124.5	149.3	169.3	179.7	208.2	223.0	232.0	279.5	297.5
17	n	91	79	65	49	37	19	14	2	—	—	—	—
	i	31.6	58.0	92 9	122.6	149 8	160.9	197.0	246.0	—	—	—	—
18	n	101	73	50	33	26	13	7	2	—	—	—	—
	i	28.8	61.4	86.6	106.3	136.8	166.8	204.3	222.5	—	—	—	—
19	n	71	52	34	20	9	2	1	1	1	—	—	—
	i	23.9	62.8	89.9	122.6	141.8	165.5	185.0	224.0	271.0	—	—	—
20	n	59	43	27	13	10	6	4	3	1	—	—	—
	i	25.4	65.2	93.0	111.0	158.0	168.5	191.8	216.7	227.0	—	—	—
21	n	48	30	12	5	4	1	1	1	1	—	—	—
	i	26.7	59.6	87.5	110.0	147.5	145.0	169.0	204.0	229.0	—	—	—
22	n	45	27	12	3	1	—	—	—	—	—	—	—
	i	26.1	57.0	96 8	114.7	87.0	—	—	—	—	—	—	—
23	n	23	10	4	1	1	—	—	—	—	—	—	—
	i	21.7	57.7	91.0	82.0	96 0	132.0	—	—	—	—	—	—
24	n	25	12	7	2	—	—	—	—	—	—	—	—
	i	26.3	41.0	77.3	117.5	—	—	—	—	—	—	—	—
25	n	15	8	4	2	2	2	2	—	—	—	—	—
	i	30.8	50.0	67.0	132.0	156 0	174 0	208 5	—	—	—	—	—
26	n	33	11	3	—	—	—	—	—	—	—	—	—
	i	21.9	45.8	72.0	—	—	—	—	—	—	—	—	—

other manual work. Among the sample households, about 42 per cent could afford to spend not more than Rs. 20 per head per month.

Birth interval in relation to age at marriage

The effect of female age at marriage on the spacing of child births was examined. The relevant data on the interval since marriage and the first live birth and subsequent ones (if any) were available for the institutional sample only (Table 5).

The women who got married at 16, 18, 20 and 22 years had their first child about 2.6, 2.4, 2.1 and 2.2 years respectively after their marriage. The birth of the first child generally occurs after two years (or more) of married life whatever be the age at marriage. Taking into account, a confinement period of 280 days, it works out that the newly married women (at these ages) evade a conception by 1 8, 1.6, 1.3 and 1.4 years respectively. It appears that women who marry late get their first issues early as compared to those married at lower ages.

The intervals since marriage of the second-order births for these women were 5.5, 5.1, 5.4 and 4.8 years respectively. This means that between the first two live births the spacing was 2.9, 2.7, 3.3 and 2.6 years respectively for the above groups of women. The corresponding "non-engaged" periods after the birth of the first child were 1.85, 1.65, 2.25 and 1.55 years respectively. These are higher than the "non-engaged" periods prior to the conception of the first child.

It has been observed that for women marrying at the age of 16, the inter-birth intervals gradually decreased up to the seventh order birth after which the inter-birth intervals increased. No such trend in birth intervals was observed for the marital ages of 18, 20 and 22. It was, however, apparent that women who married at higher ages did not generally go for higher parities. In fact, very few women belonging to the institutional group had higher order births.

Fertility performance in relation to age at marriage

For proper measurement of any covariation between "fertility" and "age at consummation", the influence of all other correlated factors such as demographic, sociological, economic, etc., require to be controlled. In view of this, three different groups of populations each known to be more or less homogeneous in terms of several socio-economic variables have been considered But, since variability between the individuals within a group in respect of several known and unknown characteristics cannot be completely eliminated the creation of a "laboratory condition" for this study was not obviously possible.

Average number of live births

The average number of live births per woman per year at each marital age within a marriage duration group have been tabulated in Table 6. The following salient points emerged from the results:

TABLE 6

Average live births per woman per year of married life by age at consummation

Age of wife at consummation (years)	Marriage duration group (years)						
	1-5	6-9	10-13	14-17	18-21	22+	All
			(i) *Institutional*				
12	0.07	0.22	0.23	0.20	0.18	0.18	0.19
13	0.12	0.27	0.27	0.28	0.30	0.19	0.24
14	0.19	0.24	0.25	0.32	0.25	0.21	0.25
15	0.28	0.26	0.32	0.30	0.25	0.21	0.26
16	0.29	0.33	0.30	0.30	0.24	0.24	0.27
17	0.21	0.30	0.29	0.24	0.29	0.18	0.25
18	0.40	0.29	0.24	0.21	0.25	0.20	0.25
19	0.28	0.29	0.24	0.22	0.19	0.25	0.24
20	0.26	0.26	0.26	0.23	0.21	0.23	0.24
21-22	0.32	0.26	0.19	0.20	*	*	0.23
23-24	0.31	0.24	0.16	0.17	*	*	0.21
25 +	0.25	0.22	0.15	0.14	—	—	0.20
All	0.28	0.27	0.26	0.26	0.25	0.20	0.25
			(ii) *Urban*				
12	—	0.27	0.28	0.19	0.31	0.21	0.23
13	*	*	0.29	0.20	0.23	0.20	0.22
14	*	0.27	0.26	0.23	0.23	0.20	0.22
15	—	0.24	0.28	0.27	0.21	0.19	0.21
16	*	0.23	0.21	0.19	0.26	0.20	0.23
17	*	0.25	0.33	0.22	0.27	0.22	0.25
18	0.31	0.18	0.20	0.25	0.28	0.18	0.22
19	0.17	0.22	0.24	0.11	0.10	0.16	0.17
20	0.37	0.24	0.15	0.18	0.19	0.15	0.19
21-22	0.32	0.33	0.36	0.29	0.24	0.19	0.26
23-24	0.60	0.33	0.17	0.20	0.17	—	0.22
25 +	0.25	0.22	0.19	0.24	0.10	—	0.20
All	0.32	0.25	0.25	0.22	0.24	0.20	0.22

Age of wife at consummation (years)	Marriage duration group (years)						
	1-5	6-9	10-13	14-17	18-21	22+	All
			(iii) *Rural*				
12	0.11	0.19	0.20	0.27	0.23	0.19	0.21
13	0.15	0.37	0.26	0.35	0.28	0.24	0.29
14	0.18	0.28	0.26	0.28	0.26	0.26	0.26
15	0.26	0.30	0.28	0.32	0.26	0.27	0.28
16	0.32	0.29	0.26	0.41	0.34	0.32	0.33
17	0.37	0.38	0.33	0.24	0.31	0.28	0.31
18	0.39	0.29	0.17	0.29	*	0.18	0.24
19	0.44	0.27	0.32	*	—	0.17	0.28
20	0.37	0.20	0.37	*	*	*	0.24
21-22	0.36	0.36	—	*	—	—	*
All	0.32	0.29	0.26	0.31	0.26	0.23	0.26

* The sample size is small.

The women who had been married for 1-5 years at the ages of 16, 18 and 20 had 0.32, 0.39 and 0.37 births respectively in the rural sample, and 0.29, 0.40 and 0.26 births respectively in the institutional sample. For the urban sample, corresponding to the marital ages of 18 and 20, the births were 0.31 and 0.37 respectively.

In all the population groups, the women who were married at age 16 experienced more child-births even after completing 22 or more years of married life as compared to those married at the ages of 18 and 20. Considering all ages at marriage together, it was observed that for all the population groups the maximum number of child-births per head per year occurred during the first five years of married life. The incidence of child-births gradually decreased with the advancement of married life.

Taking all marriage duration groups together it was observed for all the population groups that the women who started cohabitation at the age of 16 had more births per head per year of married life compared to those who began their effective marriage at the ages 18 and 20. An overall decline in the fertility performance was generally observed as the age at marriage rose beyond 16.

Estimated total births

Assuming that the reproductive span of a woman ends at the age of 45, the total live births (including multiple births) per woman during her reproductive span within marriage were estimated on the basis of the rates (i.e. average births per woman per year of married life) given in the previous section. This estimate is admittedly an approximate one, but is useful for indicating the fertility level at each age at marriage.

TABLE 7

Estimated number of live-births during the reproductive period within marriage by age at consummation

Age of wife at consummation (years)	Estimated births per woman during her reproductive span within marriage		
	Institutional	Urban	Rural
12	6.27	7.59	6.93
13	7.68	7.04	9.28
14	7.75	6.82	8.06
15	7.80	6.30	8.40
16	7.83	6.67	9.57
17	7.00	7.00	8.68
18	6.75	5.94	6.48
19	6.24	4.42	7.28
20	6.00	4.75	6.00
21-22	5.40	6.11	*
23-24	4.52	4.78	*
25 +	4.00	4.00	*

* The sample size is small

The following conclusions could be drawn from the data given in Table 7.

The number of births recorded for women married at 16 was higher than that for women married at any other age. This was true for the institutional and rural groups only. As for the urban areas, the highest number of births was likely to be recorded by women married at age 12.

The fertility level for any age at marriage was generally higher for rural women as compared to the other two groups. If the age at marriage was deferred by two years from 16 to 18, there might ultimately be a reduction in the number of births by 1.08, 0.73 and 3.09 respectively per woman for the institutional, urban and rural groups of women. If the age at marriage were raised from 16 to 20, the reduction in the number of births would be more pronounced among the urban women as compared to the other two categories.

Disregarding some irregularities in the figures, caused possibly by sampling fluctuations, it may be stated that with the rise in the age at marriage there was a corresponding fall in the fertility levels.

A measure of the interrelationship

On the assumption that the linear hypothesis is satisfactory, the coefficients of correlation were computed between "fertility" and "age at marriage" to substantiate the above discussion.

TABLE 8

Coefficients of correlation between the average number of live births and age at marriage by marriage duration

Marriage duration (years)	Population groups		
	Institutional	Urban	Rural
2	0.63	—	—
3	0.44	0.46	0.26
4	0.31	0.20	0.52
5	0.33	0.17	0.53
6-9	-0.29	0.17	0.23
10-13	-0.79	-0.33	0.35
14-17	-0.74	-0.19	0.55
18-21	-0.21	-0.61	-0.38
22 +	-0.59	-0.84	-0.20

It appeared that the bivariate relationship varies among the marriage duration groups and also among the population groups (Table 8). The estimated co-efficients were not all significantly different from zero correlation, and had different signs. Thus, in the case of the institutional group, the correlation coefficients were positive for those women having five or lesser number of years of married life and negative for those married more than five years ago. This means that even though the fertility levels were higher for women married at higher ages during the first five years of married life than for those married at lower ages, the levels tended to decrease with the rise in the age at marriage for women having six or more years of marriage duration. For urban women, the effect of higher age at marriage in reducing fertility was observed after the spouses had spent ten or more years of married life. This effect was felt at still later stages of married life for rural women.

Summary

Presented in this note is an analysis on the empirical association between "fertility performance" and "age at effective marriage" of girls. This analysis is made for the three diverse groups of populations, namely, institutional employees (ISI), and general urban and rural population groups. It was found that (i) women who married later in life got their issues earlier as compared to those who married young; (ii) those who started cohabitation at the age of 16 had more births per woman per year of married life as compared to those who began their effective marriage at the ages 18 and 20; (iii) the estimated total births of women, married at 16, 18 and 20, during their reproductive life within marriage were (per woman) respectively 7.83, 6.75 and 6.00 for the institutional group, 6.67, 5.94 and 4.75 for the urban group, and 9.57, 6.48 and 6.00 for the rural group; (iv) the effect of higher age at marriage in reducing fertility could be felt after the spouses had spent six and more years of married life in the case of the institutional couples, ten and more years in the case of the urban couples, and 18 and more years in the case of the rural couples.

ACKNOWLEDGEMENTS

As a part of a bigger project, this diagnostic study was initiated at the instance and under the overall direction of Dr. (Miss) A. Sengupta, Head, Family Planning Research Unit. My thanks are due to Shri Arun Kanti Ghosal for his valuable criticism and help in the analysis. Thanks are also due to Shri Satyendra Lal Dey for his active co-operation in the computation work.

KNOWLEDGE, ATTITUDE AND PRACTICE OF FAMILY PLANNING AMONG NURSING STAFF

MISS USHA LAL
(Social Worker)
and
DR. G. M. MATHUR
(Head of the Department of Preventive and Social Medicine, J. L. N. Medical College, Ajmer)

Our family planning programme has gained momentum during the last few years and people have started realising that it is essential to control the birth-rate. Nevertheless, there is great scope for intensifying efforts for motivating people towards this programme and to register their acceptability, and as such more emphasis needs to be laid on the extension approach.

In a hospital-setting, the role of medical and para-medical workers cannot be over-emphasised. These workers can play an important role in motivating people who attend the hospital for some treatment or the other. Particularly, the nursing personnel, who establish a greater and intimate rapport with the patients while nursing them, are in a most privileged position to impart health education including knowledge of family planning, and to motivate them to accept it. Moreover, while the patient is in the hospital he is in a most receptive mood to listen, accept and practise the knowledge given to him. It was, therefore, of interest to access the concept and attitudes of nursing personnel regarding the family planning programme as well as their knowledge about the programme and their views to make it more effective.

Methodology

The study sample included all the 199 nurses working in the J. L. N. group of Hospitals, Ajmer (both in-service and trainees) who were interviewed by the Medical Social Worker of the Department of Preventive and Social Medicine at the J. L. N. College.

A special schedule was prepared incorporating information about the nursing personnel themselves, their opinion about family planning and their knowledge and practice of family planning methods. They were also asked to suggest the roles they could play to make the programme more effective.

Results

Over half of the sample (59.3%) was constituted by trainee nurses between 16-30 years of age (Table 1). Also, the majority of the inservice nurses (71%) were in the age group 26-35.

TABLE 1

Distribution of nursing personnel according to age group and rank

Age group (years)	RANK							
	Matron	Sister tutor	Sister	Staff Nurse	ANM	Trainee	Total	Percentage
16-20	—	—	—	—	—	56	56	27.6
21-25	—	—	—	7	3	36	46	23.2
26-30	—	—	—	24	7	27	58	29.2
31-35	—	2	1	13	5	—	21	10.6
36-40	—	—	2	3	5	—	10	5.5
41-45	—	1	2	1	1	—	5	2.5
46-50	1	1	1	—	—	—	3	1.4
Total	1	4	6	48	21	119	199	100.0

Approximately 39.2 per cent of the nurses were married and a majority of them (59.4%) were Christians, the Hindu, Sikh and Muslim communities were represented by 37.6, 2.5 and 0.5 per cent of the sample respectively. Most of the nurses (66.9%) had put in less than four years of service and this group mainly consisted of trainee nurses. Thirtyone per cent had put in between five to sixteen years of service while the rest (2.1%) had been in service for over 16 years.

A distribution of the married nurses according to the number of children showed that 51.1 per cent had one to three children. While 20.6 per cent did not have any children, there were 14.2 and 14.1 per cent with four, and five to eight children respectively. On an average, each married nurse had 2.5 children.

An income-wise analysis showed that only one nurse had a monthly income of less than Rs. 15. One hundred and thirty-eight (69.6%) had an income of between Rs. 15-99 per month and the rest received a monthly income of Rs. 100-500.

Only 77 per cent of the 199 nurses could explain as to what they understood by the term family planning. In the opinion of 50 per cent of the nurses, it meant limitation of family size and 48.7 per cent interpreted the term as "control of population growth". About 71.8 per cent of the married nurses had knowledge of family planning. Of these, 44.6 per cent belonged to the monthly income group of Rs. 50–99, while 28.5 per cent belonged to the Rs. 100–149 group

Also, 34.6 per cent of the nurses had acquired information about family planning by working as family planning staff, 29.6 per cent derived information from mass media, 24.3 per cent through class-room teaching, 11.3 per cent claimed to have got the information from their husbands, while friends and relatives were the sources of information for 10.3 per cent of the nurses. About 21.8 per cent of the nurses did not offer any reply.

TABLE 2

Practice of family planning among married nurses and number of children

No of children	Sterilisation		Conventional Contra-ceptives	Oral pills	Total No	Percentage
	Male	Female				
1	—	—	2	1	3	33.3
2	1	1	6	—	8	50.0
3	1	3	4	1	9	60.0
4	5	4	1	1	11	100 0
5	3	—	—	—	3	50.0
6	2	—	—	—	2	66.6
7	1	—	—	—	1	100.0
8	1	—	—	—	1	. 100.0
Total	14	8	13	3	38	
Percentage	36.8	21.1	34.2	7.9		48.7

As is evident from Table 2, out of 78 married nurses in the sample, 38 (48.7%) were found to be using some form of contraception. Of these, 57.9 per cent gave a history of sterilisation of either partner. An analysis relating the number of children with practice of family planning, showed that only 33.3 per cent of the nurses who had one child were using contraceptives and none had undergone sterilisation. All the nurses who had 4 children had accepted one or other family planning method, and as many as 81 8 per cent of them had been sterilised.

Over half of the married nurses (64.1%) considered sterilisation of either partner as the most effective method of family planning Approximately 17.9 per cent preferred oral contraceptives and 10.3 per cent felt that conventional contraceptives were most effective. Only one nurse preferred the use of the IUD. There were no answers from 6.4 per cent of the nurses.

Almost 97.5 per cent of the nurses were in favour of family planning. Five nurses did not approve of it because two felt that the programme was not successful, one student nurse expressed her disfavour on religious grounds and the other two did not give any specific reason for their disapproval.

When the respondents were asked to express their opinions regarding the means for propagating family planning, a large number of them (83.9%) said that audio-visual methods were most effective for the purpose. Talks were considered as an effective method of spreading the family planning message by 34.6 per cent while family planning clinics were preferred by 12 per cent. Also, 6.1 per cent said that the nurses themselves could convey the message in their respective hospitals and refer eligible couples to family planning clinics. About 19.0 per cent of the nurses interviewed also expressed the opinion that family planning devices are being misused by unmarried persons.

The opinion of the nursing staff regarding age at marriage for boys and girls indicated that 95 per cent of the respondents were in favour of boys marrying after the age of 20, while about 93 per cent were in favour of girls marrying before the age of 25.

When asked about the role that nurses could play in the family planning programme, 29.6 per cent were of the opinion that nurses could be more useful if posted in family planning clinics, which would also ensure a better follow-up of the cases attending the clinics. About 51 per cent also stated that nurses could undertake the important task of educating patients and motivating them for family planning while they are in the hospital or are attending the hospital as out-patients.

The experience of the nursing staff showed that only 35.1 per cent were ever asked for family planning advice by their patients. Of these, 22.8 per cent were rarely approached and 38.6 per cent each reported that they were occasionally and frequently approached for advice. Of the married nurses, 35.9 per cent referred cases to family planning clinics. Also, only 31.7 per cent of the 38 married nurses who were themselves using contraceptives had ever referred their patients to clinics for family planning advice.

Among the suggestions offered for strengthening the family planning programme by 98 (49.7%) of the 199 nurses who were interviewed, 26.5 per cent emphasised strengthening of educational measures for family planning, 21.4 per cent suggested strengthening of follow-up measures, while 13.3 per cent were of the opinion that there should be more co-operation between family planning staff and the people. Of the 25.5 per cent who suggested that more emphasis be laid on one or other method of family planning, 16.3 per cent mentioned sterilisation, 8.2 per cent oral pills, and 1.0 per cent abstinence. Also, 13.3 per cent did not have any suggestions to make.

It is suggested that teaching of family planning should be intensified during the training period of the nursing staff and that they should be oriented to undertake this programme as a part of their duty in their day-to-day work rather than leaving it entirely to the nurses working in the family planning clinics.

ACKNOWLEDGEMENTS

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NEWS & NOTES

FPAI FILM WINS NATIONAL AWARD

FPAI's short colour cartoon film "Baap-re-Baap" was awarded the first prize in the short films category at a glittering function in Bombay on 19th August 1972. The awards were presented by Shri Uma Shankar Dikshit, Union Minister for Health and Family Planning, and Shri V. P. Naik, Chief Minister of Maharashtra, presided.

In his welcome address, Dr. Rafiq Zakaria, State Health Minister, emphasised the need to encourage the film industry to involve the masses in the family planning programme.

Shri B. K. Karanjia, a member of the National Awards Selection Committee, in his report on the awards said the Committee found the shorter films, namely quickies and documentaries, to be better than feature films for it was often difficult for a feature film to sustain interest in a topic like family planning for two or three hours at a time.

Another recommendation of the Committee was that the family planning department should keep producers constantly in touch with developments in family planning schemes and techniques so that they would serve as guidelines for future productions. The Committee also recommended a 'motion picture impact study' on scientific lines on audiences at different levels, particularly, youth, women, labour, backward classes and agriculturists.

ECAFE MEETING EXPLORES ROLE OF VOLUNTARY ORGANISATIONS IN FAMILY PLANNING

Specialists from nine ECAFE countries, including India, and serving in their own capacity as experts from family planning associations, regional or international organisations, foundations and governmental services, met at a meeting scheduled by the United Nations Economic Commission for Asia and the Far East (ECAFE), in Bangkok from 7th to 12th August 1972, to explore ways in which voluntary organisations can best aid in national family planning programmes.

A background note sent from ECAFE to participants recalls that national voluntary organisations have pioneered in family planning movements, "mainly with a view to protecting the health of the mother and child and promoting family welfare", and asks: "Now Governments are fully committed to family planning programmes, what is the future role of the voluntary organisations".

Smt Avabai B Wadia, President FPAI, receiving the National Award for "Baap-re Baap" from Shri Uma Shankar Dikshit, Union Minister for Health and Family Planning

Participants at the ECAFE meeting at Bangkok (from right to left) U Nyun, Executive Secretary, ECAFE, Mrs Nyun, Col B L Raina, Mrs Avabai B Wadia, India · Mr. B Aromin, ECAFE, Mrs. Amrithmahal, Mr Amrithmahal, ECAFE, Dr I Sodhy, Malaysia, Dr. Ziai, Iran, Dr. Ratnam, Singapore, Mrs E C Fernando, Ceylon;

The note reports that 15 countries in the ECAFE region have national family planning programmes as a distinct governmental activity and in one country, a private association conducts a country-wide programme with some financial support from the Government.

The meeting reviewed the pattern of relationships between governments and voluntary organisations in countries having governmental family planning programmes in an attempt to identify and examine factors which have contributed to or militated against the harmonious and mutually supporting relationship—which both governments and voluntary organisations seek. Other topics which were discussed included the responsibilities best suited to be vested in voluntary organisations, financing of programmes undertaken by voluntary organisations, the accountability of voluntary organisations in programme performance, and the regional and international role of national family planning associations.

The report of the Expert Group will be presented to the ECAFE sponsored Second Asian Population Conference, to be held in Tokyo in November 1972, for its consideration and endorsement recommendations.

AWARD FOR NEW DELHI BRANCH

The New Delhi Branch of the Family Planning Association of India was awarded a State-level Award for the second year in succession, by the Government of Haryana for doing commendable work in the field of family planning, among voluntary organisations during the year 1971-72.

The Award, a shield, was presented by His Excellency, the Governor of Haryana State, Shri B. N. Chakrabarti, at a function held in Chandigarh on May 12, 1972. Shri Gurdial Chadha, the Project Officer of the Branch, received the Award on behalf of the Branch.

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1. To disseminate knowledge and education about, and to promote the adoption of, the practice of family planning for the advancement of basic human rights, family and community welfare, the achievement of a balance between the population and its resources and productivity, and the attainment of a higher standard and quality of life.
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3. To study and formulate policies and programmes regarding the provision of measures for family planning, population control and allied subjects, and place its considered views and advice before Government and other agencies whenever appropriate.
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ATTITUDES OF PANCHAYAT MEMBERS TOWARDS FAMILY PLANNING—AN EXPLORATORY STUDY IN RURAL PUNJAB

SHRI R. KUMAR
(Rural Health Research Centre, Narangwal, Ludhiana, Punjab)

It is being increasingly recognized that all our efforts to promote family planning will not yield the desired result till the family planning programme really becomes the people's programme. Several efforts have been made by Government as well as voluntary organisations to help take the national programme to the people. Nevertheless, although this has been realized and much emphasized, even at this stage, Dr. Banerjee observes that 'No efforts were made to conduct systematic research to find an optimal mechanism for getting community participation'.[1]

As the various Government departments are making efforts to involve the village Panchayat, as an institution, for promoting family planning programmes, it was thought worthwhile to conduct a study which would reveal the extent of their awareness, knowledge, practice and attitudes toward family planning[2] It is of prime importance that we first have extensive knowledge of their attitudes so that they can be trained as "motivators".

This study does not aim at determining the cause and effect relationship in attitudes to family planning between Panchayat members and the community. To assess the extent to which their attitudes are reflected on the community or *vice versa* requires separate study. The Panchayat, as such, may not exert much influence on village residents because of its own varying personality and factions and group dynamics within the village, but at any level of influence, the opinion of the Panchayat members will have some impact, particularly on those who elected them. The Panchayat is thus one of the institutions which can help to promote family planning in rural areas. The present paper aims at examining the attitudes of Panchayat members towards family planning so as to determine what needs to be done to educate them as "motivators".

The study was carried out in 24 villages located in three community development blocks of Ludhiana district in Punjab. Each village has its own Panchayat. In all there were 148 Panchayat members, including 24 women who were excluded from the sample as the male investigator could not discuss the subject of family planning with them. Panchayat members over the age of 60 were also excluded, though efforts were made to interview them but the contacts proved totally unsatisfactory. This group seemed either too old to respond; gave irrelevant replies or found family planning too difficult to discuss. The sample was thus reduced to 88. Of the 88, three members were residents of Calcutta; one was a mental case; two had died and no new members had been elected; and 12 could not be contacted in spite of repeated visits.

Demographic characteristics

Of the 70 Panchayat members interviewed, 20 were Sarpanches. Panchayats in this area are dominated by Jat Sikhs who constitute 77.1 per cent of the sample and about 52 per cent of the general population. About 21 per cent of the respondents belonged to the Ramdasia caste, while one was a Hindu Brahmin. Four out of every seven respondents were illiterate. Of the remaining 30, 11 were Matriculates and above, while 19 had received Middle School education. The average age of the respondents was 45 years; the youngest being 28 years. None of the Ramdasia respondents was a landowner. The landowners had an average holding of 11.5 acres ranging from three to 65 acres. At the time of the study five respondents were unmarried, six were widowers while the rest were married. The average family size was 5.8.

Attitude towards family planning

The Panchayat members were asked if they approved of "married couples doing something to keep their wives from getting pregnant too often or having children that they do not want". Positive responses were obtained from 92.8 per cent of the respondents. About 4.3 per cent disapproved and 2.8 per cent did not commit themselves.

The 65 who approved gave the following reasons:

Reasons for approval	Frequency of reasons (n = 93)
1. Advantages of a small family	53 (57.0)
2. Disadvantages of a large family	27 (29.0)
3. Preserves man's health	10 (10.8)
4. Can have children by choice	2 (2.2)
5. Because of government approval	1 (1.1)

The above table shows that the majority (86% responses) of the respondents approved of family planning because they thought it was advantageous to have a small family. The main reasons for disapproval were that family planning is against the will of God and that the use of contraceptive methods might lead to certain health problems. The respondents who expressed disapproval either gave no specific reason, or thought that the size of the family should perhaps depend on the income of the family.

About 98.6 per cent of the Panchayat members were in favour of spacing the birth of children, 44.2 per cent were in favour of a 3-4 year interval between the birth of the children and 7.1 per cent preferred an inter-birth interval of five years or more. The various reasons for spacing are listed below .

Reasons for spacing	Frequency of reasons (n = 172)
1. Preserves child's health	49 (28.5)
2. Preserves mother's health	43 (25.0)
3. Preserves man's health	9 (5.2)
4. Convenience in rearing children	27 (15.7)
5. The older sibling becomes self supportive	22 (12.8)
6. More time can be devoted to better upbringing	8 (4.7)
7. Involves less expenditure at one point of time	7 (4.1)
8. Easier to educate	3 (1.7)
9. Others*	4 (2.3)

* Others include responses like :

1. Ageing process is not accelerated (1).
2. A spaced family can be more mobile (1).
3. Older siblings help in the up-bringing of younger ones (2).

The table shows that about 59 per cent of the responses from 70 respondents were related to health and only 5.8 per cent of the total responses were for economic or educational reasons.

While talking to people in the Punjabi villages about "family size" we gathered that "family composition" was more important. The majority of the people wished to have two sons and one daughter.* The study among Panchayat members also bears this out. Table 1 shows that 64.3 per cent of the respondents had a desire for two sons in addition to the wish for daughter(s), 61.4 per cent preferred to have one daughter in addition to an expressed desire for a particular number of son(s) and as many as 68.6 wanted three children.

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* On the basis of an attitude survey on family planning carried out by the RHDC.

TABLE 1

Number of children desired by the respondents

Number of children	Sons		Daughters		Total children	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
1	4	5.7	43	61.4	—	—
1-2	3	10.0	5	68.5	—	—
2	38	64.3	8	79.9	9	12.9
2-3	5	71.1	0	79.9	10	27.2
3	4	77.1	0	79.9	29	68.6
3-4	1	78.5	0	79.9	8	80.0
4	—	—	—	—	9	92.9
4-5	—	—	—	—	3	97.2
5 +	—	—	—	—	1	98.6
No definite answer	15	99.9	14	99.9	1	100.0

In order to assess their attitudes to small families the Panchayat members were asked to state the disadvantages, if any, of having two children. Approximately 68.6 per cent disclaimed any disadvantages in a family of two children. The fear of non-survival was shown as the outstanding disadvantage. The following table brings to light the various apprehensive ideas of the respondents regarding the two-child family.

Disadvantages of having two children	Frequency of disadvantages (n = 75)
1. No disadvantage ..	48 (64.0)
2. Fear of non-survival ..	11 (14.7)
3. Agriculture needs more hands to work ..	5 (6.7)
4. No disadvantage but it would be better if there is one son ..	5 (6.7)
5. Old age will not be secure if there are only two children in the family ..	3 (4.0)
6. Others* ..	3 (4.0)

* "Others" include responses such as : No disadvantage if both are sons (1). No disadvantage but better if there are two sons and one daughter (1) Small families present a less impressive front when village quarrels occur (1).

The respondents were next asked to enumerate the advantages of a "large family". The concept and composition of a large family were left to the imagination of the respondents. The following table enumerates their answers to this question.

Advantages of having a 'large family'	Frequency of advantages (n = 70)
1. No advantage ..	40 (57.1)
2. Lots of advantages if there is unity & co-operation	6 (8.6)
3. Large families are good if the children are worthy	5 (7.1)
4. It is good to have a large family if there is a lot of property ..	3 (4.3)
5. Can accommodate idle members of the family ..	3 (4.3)
6. A large family is good if the children co-operate with each other ..	3 (4.3)
7. More hands to earn ..	2 (2.9)
8. Small families in villages are at a great disadvantage when quarrels occur ..	2 (2.9)
9. A large family means less expenditure ..	2 (2.9)
10. Others* ..	2 (2.9)

* "Others" include : It is good to have a large family if there is unity and property (1), and No opinion (1).

While more than half of the respondents (57.1%) stated that there were no advantages to a large family, 24 per cent indicated a preference for large families with certain conditions.

The study indicates that most Panchayat members had a positive attitude towards the use of different family planning methods. The majority were in favour of spacing children on grounds of health and convenience in rearing. A large number of them considered up to three children as the ideal family size. A majority found no actual disadvantages in having two children and saw no advantage in a large family.

To most of the Panchayat members interviewed, family planning meant either family limitation or the use of certain contraceptive devices. Most of them had heard of the loop and the condom. All had heard of sterilisation. None mentioned either spacing or sterility treatment as part of their image of the family planning programme. The majority of those with up to three children were not using family planning devices. Proportionately, literate Panchayat members below the age of 45 years had greater experience in the use of some method(s), although only a small proportion were current users.[2]

Summary

In persuading a person to become an acceptor or motivator, positive attitudes play a vital role. A positive attitude is a basic prerequisite for any motivational process. There may be many other social, economic and personal factors that come into play in the process of motivation or acceptance.

As of now there is a need to educate Panchayat members in the spacing and sterility aspects of family planning and to provide them with adequate knowledge of different methods of contraception. Those who happen to be in situations in which they are supposed to persuade others to accept family planning methods (s) should themselves be motivated to accept it, only then can we make family planning the programme of the people.

ACKNOWLEDGEMENTS

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THE INTRA-UTERINE DEVICE—A REAPPRAISAL

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Exactly six years ago, the Government of India introduced the intra-uterine device (IUD) on a mass scale. This was done with the hope that it would be widely accepted particularly by under-privileged women. Unfortunately, due to various reasons the device did not prove as successful as it was first thought it would. Following the initial spurt of enthusiasm, there was a rapid decline in the number of acceptors. Today, the IUD has lost much of its earlier popularity both with the general practitioners and with the public.

Of the currently available contraceptives in the country, reliance must still be placed on the IUD for it continues to be the cheapest, easily reversible and highly effective method. Its use is particularly important for the vast majority of women and specially those belonging to the lower socio-economic group, who find it difficult to visit a clinic regularly to collect contraceptives like the oral pills. This paper is based on a follow-up study of IUD users to reappraise its utility and to suggest measures for its re-introduction on a mass scale.

Methods and materials

A heterogenous group of 399 women who were willing acceptors were carefully prepared prior to the insertion of the IUD. This number, however, excludes 20 women who could not be traced at the final assessment. Insertions were carried out in an urban clinic of Calcutta over a period of four years between July 1964 and July 1968, and detailed records of various factors which may influence medical and other complications related to the retention or rejection of the device were maintained. After the termination of the pilot project, no attempt was made to follow up these women for the next two years. In July 1970, these women were re-contacted in their homes to assess their reactions to the IUD. The final assessment was done with the objective of finding out how many women had retained or removed the device and the reasons associated with each case.

Results

The period of observation varied considerably from woman to woman. About 26.8 per cent had been using the device for less than a year, 24.8 per cent for 1-2 years, 17.5 for 2-3 years, 16.3 per cent for 3-4 years, 14.5 per cent for 4-5 years and 2.5 per cent for 5-6 years.

Of the 399 women, 149 (37.3%) were found to be using the device at the time of the last contact, the average retention period at the time of the last observation being 40 months. In 199 women (49.9%), who had the device removed on request the average period of retention was 21 months. Another 45 (11.3%), expelled the device spontaneously after an average period of eight months while the remaining six (1.5%) conceived with the device *in situ* within an average period of seven months after insertion.

The age group and average number of living children of the IUD users are shown in Table 1.

TABLE 1

Distribution of IUD users by age and number of living children

Age group (years)	Number of women	Average number of living children
15-19	16	1.8
20-24	110	2.9
25-29	121	4.2
30-34	94	5.4
35-39	46	6.0
40 and over	12	7.8
Total	399	

The majority of the users had three or more surviving children. This finding is similar to that reported by Jorapur[1] (1970) and Swarajyalakshmi and Anasuya[2] (1970).

The socio-economic conditions of the acceptors :

More than half of the acceptors belonged to the low socio-economic group, the income of the majority of the families (296 out of 399, i.e. 67%) being less than Rs. 200 per month. Ninetyseven acceptors or 19 per cent of the families had a monthly income of Rs. 200-300 and the rest (6.5%) had family incomes of over Rs. 300 per month.

Removals

Nearly half of the 399 acceptors (49.9%) asked for the removal of the device. The reasons for such a request were mainly medical (in 127 or 64% of the women) and personal (in 47 or 23.6% of women). Nineteen others discontinued the use of the device as they wanted to have a child, and the remaining six claimed to have been influenced by their general practitioners.

Thus, though medical complications leading to discontinuation of use were observed in 64 per cent of the women who requested a removal, such complications also occurred in 40 (26.8%) of the 149 women who did not discontinue its use and had the device *in situ* at the time of the last observation. It appears then, that about 27 per cent of the women could tolerate the device in spite of medical complications. It may be noted that among women using the intrauterine device, the most common reason for requesting removal of the device was medical complaints. These were bleeding, pain and other discomforts. Such complaints have been noted in all follow-up studies of the IUD.[1,2] Table 2 shows the time intervals for which the device was tolerated by these women.

TABLE 2

Period of retention of the IUD in users with medical complications

Period	Number with medical complications/total women	Per cent with complications
<1 year	43/58	74
1–2 years	39/59	56
2–3 years	19/43	44
3–4 years	17/24	71
4–5 years	8/14	57
5–6 years	1/1	64
Total	127 199	

The personal reasons which led to the removal of the device in the 47 women were: Preference for an alternate method of contraception (18), the women "did not like the loop" (10), their husbands "did not like the loop" (5), the women were moving out of the city and feared lack of medical attention elsewhere (5), fear of cancer (4), death of husband (4), on mother-in-law's advice (1).

The above data indicates that of the personal reasons given by the 47 respondents, preference for other methods of contraception was mentioned by as many as 37 per cent of the drop-outs.

An analysis of the period of retention of the device among the 19 women who had the IUD removed as they desired a pregnancy, and their average nmber of living children showed that 18 of the 19 women (94.7%) had less than three living childern, as shown in the following table.

The number of surviving children thus appears to be an important factor in that even among the original 399 acceptors, 383 had three or more surviving children (Table 1).

Period of retention	Number of women	Average number of living children
1 year	2	2.5
1–2 years	3	2.3
2–3 years	10	2.9
3–4 years	3	2.3
4–5 years	1	
Total	19	

The influence of private practitioners over the acceptors in this study was not very significant as only 6 (3%) of the 199 acceptors asked for removals at their suggestion.

Table 3 indicates an age-wise distribution of the women and the rates of removal. No significant difference was evident in the removal rates among the different age groups of acceptors.

TABLE 3

Number of women by age-group and the rate of removal

Age group (years)	Number of women	Number of removals	Removal rate (per cent)
15-19	16	7	43.8
20-24	110	60	54.5
25-29	121	55	45.4
30-34	94	51	54.2
35-39	46	20	43.5
40 and above	12	6	50.0
Total	399	199	

Satisfied users of the IUD

The reasons supporting the continued use of the IUD as stated by 149 acceptors were: being a one-time method, secrecy regarding its use can be well maintained; the husband does not object to its use; the method does not require privacy as in the case of other conventional methods; it provides high protection against pregnancy, and even if medical complications are present, they can be treated with appropriate medicines.

Conclusion

This pilot investigation showed that even at the termination of the study, 37.3 per cent of the women retained the device for the reasons given above. This figure could have been increased if regular follow-up had been maintained,—since bleeding is the most commonly encountered complication, its treatment should be prompt and adequate. At the present state of our knowledge, there is no known therapy to counteract abnormal bleeding as a result of IUD insertion. One tablet of 'methergine' (0.125 mg. methylergometrine per tablet) 2-3 times a day for 2-3 days depending on the period of bleeding has been found to be effective. 'Ostocalcium' tablets (calcium and vitamin D) have also been tried but these have not been found to be as responsive as 'methergine'. This study showed that the IUD was a popular method among urban women but in another IUD study in a rural area of Singur (in 1965-66), it was found to be more popular. Among rural couples, 60 per cent of the couples who had never practised contraception, found the IUD highly acceptable.

Recommendations

The following recommendations may be made on the basis of this study, for reintroduction of the IUD on a large scale:

1. Confidence in the Medical Officer is the principal factor, in the acceptance of the device on a mass scale.

2. Proper selection of cases comes next in importance so that there may not be any unnecessary rejections of the device. The main contraindications to the use of the device are suspicion of pregnancy, any inflammatory condition in the pelvic organs, history of abnormal bleeding and menorrhagia, or severe anaemia and third degree of prolapse. Such cases, however, can be selected for insertion after the necessary treatment has been given.

3. The IUD is more suited to women in the younger age groups who have fewer surviving children and are desirous of spacing subsequent pregnancies. The device may be inserted as a preliminary to adoption of a permanent method for limitation of pregnancies.

4. The IUD may best be inserted 4-6 weeks post-partum. Post-partum insertion on the 4th or 5th day may be tried, only if a close follow-up of the subject is possible.

5. While putting forward the advantages of the IUD, its side effects and complications should be fully discussed with the acceptor in order to prepare her psychologically before its insertion.

Rumours and various antagonistic opinions regarding the "loop" should be cleared by authentic published reports. The occasional failure of the method resulting in pregnancy with the device *in situ* should also be disclosed prior to its insertion.

6. The first follow-up visit should be as early as one week after insertion. The interval may gradually be increased to three months.

Regular follow-up and supervision is essential so that any complication or any doubt which might arise can be dealt with immediately.

As expulsions are common in IUD users, each woman should be taught to self-examine the presence of the device periodically.

7. The IUD programme should form an integral part of postnatal and gynaecological clinics of all hospitals and health centres.

8. Medical persons entrusted with the IUD programme should be trained in gynaecological work. As it is clear that the device should not be inserted without proper selection of cases, it is suggested that if medical personnel are available, paramedical personnel should not be entrusted with the responsibility of insertion.

Country "dais" (midwives) sometimes do a lot of damage through counter-propaganda. The "dais" should therefore be brought under the MCH and family planning programme and trained in the use and application of contraceptive methods.

9. The diagram of the IUD inside the uterus, which is shown as a model to women, in family planning clinics, often frightens them into thinking that the device inside their bodies might do them harm. Hence health education measures should aim at the benefits of family planning to the mother and her family and on the particular advantages and disadvantages of various contraceptive methods.

10. Finally, a careful and systematic evaluation of the programme, which includes a close follow-up, is essential.

Apart from the mechanical process of insertion and removal, medical personnel who perform IUD insertions should be required to give quarterly statements of the progress made by the programme and the major complications encountered by them in the course of their work.

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STATISTICAL ANALYSIS OF PRE AND POST TRAINING SCORES

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Introduction

A 30-day educational training course for District Extension Educators was conducted by the Training Wing of the Family Planning Training and Research Centre, Bombay, during July-August, 1971. In all, there were 33 trainees—17 male and 16 female.

The object of this study was to discover whether there was any gain in the knowledge of the trainees following the D. E. E. training course.

Demographic data of the trainees

(a) *Educational Standard.* The majority of the trainees, i.e., 75.8 per cent either had a post-graduate degree or were graduates with training in social work or family planning. Only one trainee was an undergraduate.

(b) *Age structure.* About 88 per cent of the trainees were between the ages of 25 and 39 years. Only two each were over 39 years and below 25 years of age.

(c) *Marital status and number of living children.* Out of the 33 trainees, 27 were married, five were unmarried and one was a widower. The data revealed that 57.5 per cent of the trainees had one to three living children and 78.7 per cent had two or less than two living children. It is interesting to note that these trainees working in the field of family planning are not only interested in motivating members of the community to adopt family planning, but themselves practise it.

(d) *In-service experience.* Among the trainees, three had no service experience of any type. Only one of the trainees, had an experience of 27 years and was on the verge of retirement. The remaining were distributed in the range of one to eighteen years of service experience.

Evaluation of the training methodology

For the purpose of evaluating whether the trainees had gained from the training imparted to them, a comparative study of the marks obtained by them in the test conducted before the commencement and after the completion of the training programme was made. The one-hour tests consisted of a questionnaire containing fifty questions on the educational aspect of family planning.

Findings

The minimum and maximum marks obtained in the pre-training test were 15 and 36 respectively and the average marks were 25.52, while in the post-training test, the minimum and maximum marks were 20 and 43 respectively and the average marks were 31.65. The increase in the average marks of the post-training test over the average marks of the pre-training test was 24.02 per cent.

When the performance was studied according to the sex of the trainees it was observed that the average marks obtained by the female trainees in the pre-training test as well as in the post-training test where higher than the marks obtained by male trainees. In both the tests, the coefficients or variation for the female trainees were less than those for the male trainees (Table 1), indicating greater homogeneity in the knowledge of family planning among the female trainees.

TABLE 1

Average marks and coefficients of variation of pre- and post-training tests

Source	Pre-training test		Post-training test		% increase in post-training average marks over pre-training average marks	t	t 01
	Average marks	Coeff. of variation	Average	Coeff. of variation			
Males	24.94	0.218	31.35	0.207	24.02	6.084**	2.921
Females	26.12	0.154	31.97	0.136		7.426**	2.947
Combined	25.52	0.187	31.65	0.173		8.975**	2.741

** Highly significant.

It may be observed from Figure 1 that the graph for the post-training test falls to the right of that for the pre-training test, which means that on the whole the group was benefited by the training.

FIGURE 1

FREQUENCY DISTRIBUTION ACCORDING TO MARKS OBTAINED IN PRE AND POST TRAINING TESTS

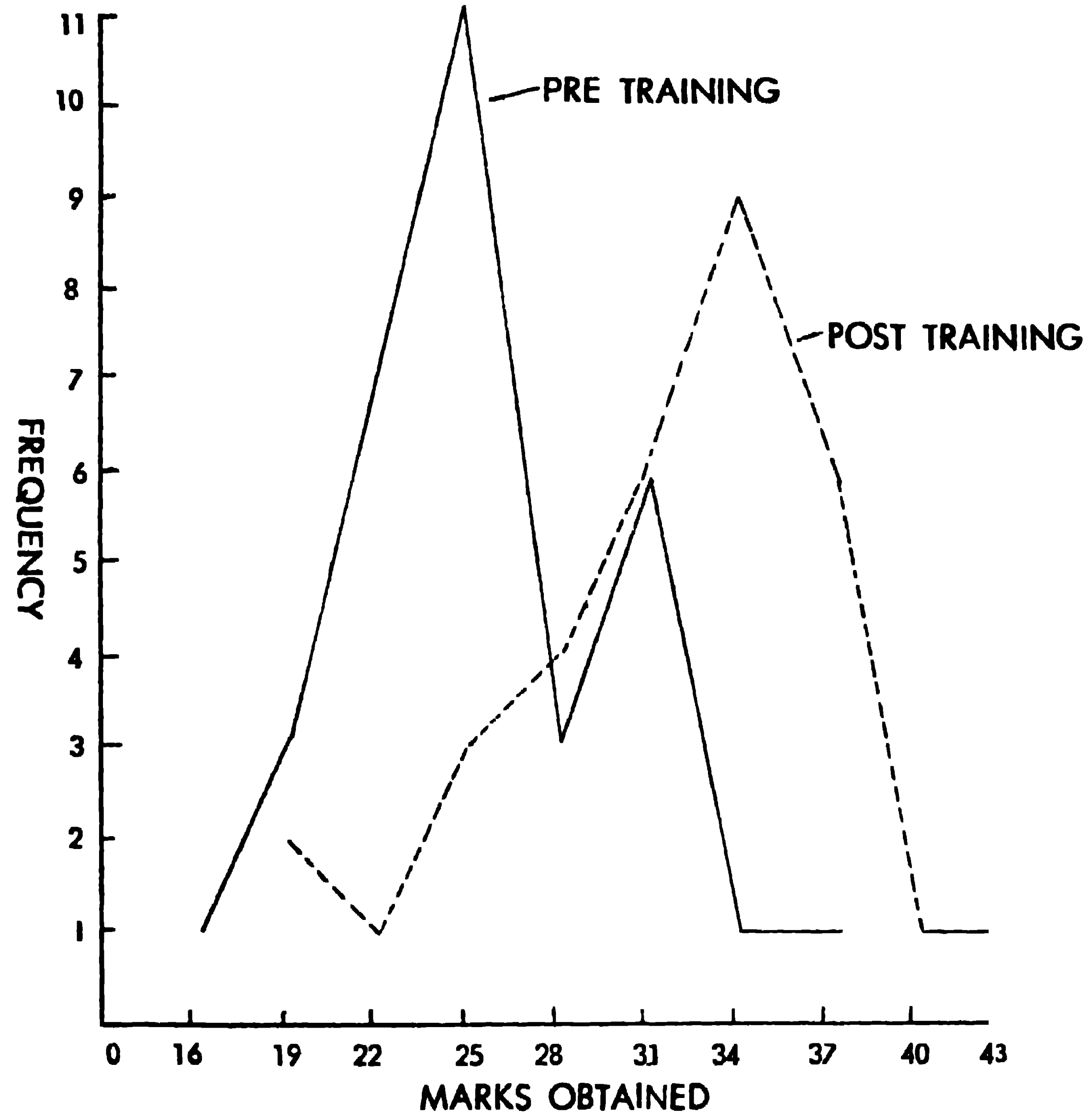
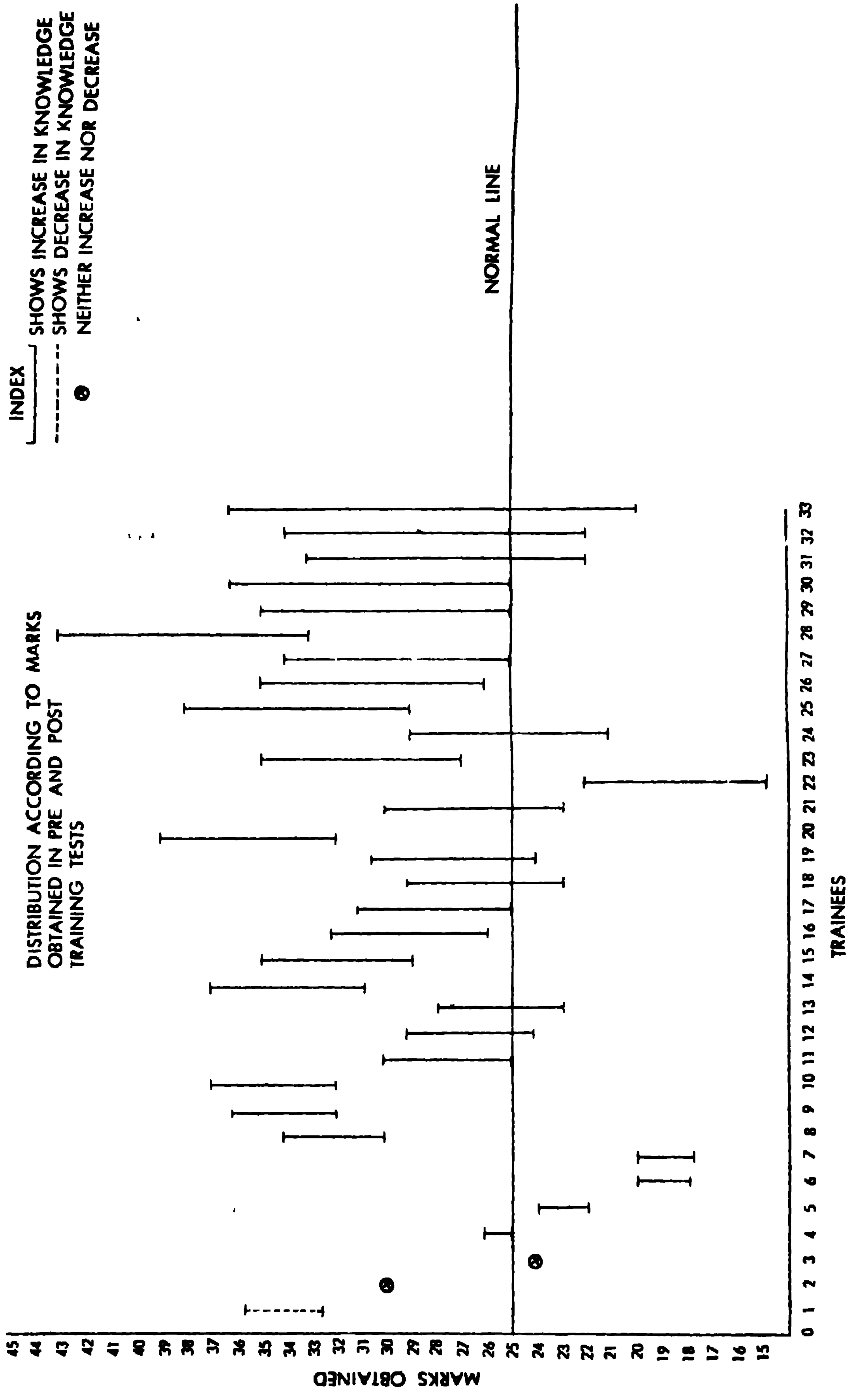


Figure 2 indicates that 19 trainees at the time of the pre-training test were either on the normal line or above it (normal line drawn at 25 marks). Out of these 19, one got lower marks, one got the same number of marks and the remaining 17 got higher marks in the post-training as compared to the pre-training test. None of these 19 trainees came below the normal line in the post-training test.

Out of the 14 trainees who were below the normal line at the time of the pre-training test, five could not even reach the normal line while nine crossed it. The three trainees who showed the


DISTRIBUTION ACCORDING TO MARKS OBTAINED IN PRE AND POST TRAINING TESTS
INDEX
SHOWS INCREASE IN KNOWLEDGE
SHOWS DECREASE IN KNOWLEDGE
NEITHER INCREASE NOR DECREASE
NORMAL LINE
MARKS OBTAINED
45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15
TRAINEES
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33

FIGURE

maximum difference between the marks obtained in the pre- and post-training tests were among these nine trainees.

It has been mentioned earlier that there was an increase of 24.02 per cent in the average number of marks. This claim of advancement in the knowledge of the trainees due to the training would not be readily acceptable unless the data is subjected to a more careful examination. Therefore, the "t" test was applied to the differences in the marks obtained in the two tests for both the sexes separately and also for the combined group. The test revealed that the difference in marks in each case was highly significant. This indicated that there was a real difference between the knowledge of the trainees before and after the training and that the training benefited them very much from the point of view of their gain in knowledge.

The test of significance for rank correlation ($r = 0.695$) showed that this correlation was highly significant. This would mean that for in-service training previous knowledge of the subject is highly desirable for attaining a specified standard of achievement in the training. From the point of view of administration, thus, the selection of the candidate for in-service training courses should be based upon previous knowledge of the candidate.

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AFTER-EFFECTS OF VASECTOMY AND ITS SOCIAL ACCEPTANCE

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The realisation of our long-cherished goal of spreading the social norms of planned parenthood through spacing and prevention of unwanted pregnancies mainly depends on the availability of reliable and culturally accepted methods of contraception. A variety of methods are being recommended by Family Planning Centres, both rural and urban, which are offering services for the vasectomy operation as a permanent measure to limit the size of the family.

The present study was carried out to determine the after-effects of the vasectomy operation, viz. the nature of complications and change in sexual behaviour, the level of satisfaction, and its social acceptance which are of vital importance for the popularity of the method itself and for the smooth running of the programme.

Universe

This study was confined to those respondents who had undergone the vasectomy operation at the five family planning urban centres in Jaipur city during the period March 1969 to April 1970. Of the total number of 327 cases operated during the period at these five urban centres, 117 were Muslims, and these latter cases constituted the sample for the present study.

Of the 117 cases only 90 cases could be contacted. Enquiries revealed that 13 persons had left the area for good, 12 persons could not be contacted due to incomplete and incorrect addresses in the case registers and two were not available in spite of repeated visits to their residence as well as their work places.

Methodology

The data were collected on the basis of the Census by the author himself during March to November 1971, using an interview schedule pre-tested on 15 cases. The schedule was divided into three parts to collect information on the social and economic status, the nature of complications and change in sexual behaviour, and the level of satisfaction and social acceptance.

Results

The socio-economic variables studied, included income distribution and educational status.

Age

The average age of the respondents at the time of the operation worked out to 39 years. Of the 90 respondents, 78 (86.7%) were below the age of 45, while 12 (13.3%) were above 45 years of age. The maximum number of respondents (30.0%) were in the 35-40 age group. This could be attributed to the preference for living male children and the sense of insecurity prevailing among the respondents as regards vasectomy being a permanent measure ; very few informants seem to know about the recanalisation operation.

Income distribution

The average income per month of the respondents was Rs. 253.9. The break-up showed that out of 90 respondents, 25 (27 8%) had a monthly income below Rs 200, 59 (65 6%) below Rs. 350, and only 6 (6.6%) above Rs. 350. Thus, more persons from the middle income groups, i.e. those earning between Rs. 200 to Rs. 350 a month, had accepted the operation in comparison to the lower and higher income groups.

Educational status

As against only two illiterate respondents, 24 (26 6%) had received middle school education, 29 (32.3%) up to Higher Secondary School, 35 (38.9%) up to Graduation and 2 (2.2%) had done their post-graduate studies. It may be concluded that education is one of the important factors for the acceptance of the operation.

The social and religious values associated with a male child in our society are very high and it was of interest to determine the co-relation, if any between the number of male children and acceptance of vasectomy. The average number of living male children per person in the present sample was 4.1. None of the respondents had less than two living male children. Out of 90 informants 29 (32.3%) had three, 30 (33.3%) had four, 22 (24.4%) had five to six while five (5.6%) had seven or more living male children.

Twenty-five of the 90 respondents had complications of one or the other type after the operation. Of these 25 informants, 3 (12.1%) reported pain and swelling, 5 (20%) and 3 (12%) experienced nervousness and uneasiness respectively, while 14 (56%) experienced physical discomfort like general weakness, headache and so on. Nineteen of the 25 had visited the Family Planning Centres for consultation and help.

Sexual Desire

The results indicated that sexual desire was normal in 66 (72.5%), increased in 17 (18.9%), decreased in four cases (4.4%), while three informants did not answer the question.

A suspected change in the sexual act is a strong barrier in the process of motivation. It was found that 62 (68.8%) of the 90 respondents experienced no change in the sexual act while 28 (31.2%) experienced one or the other type of change. Of these 28, three (10.7%) experienced greater intensity, five (17.8%) lesser intensity, (21.4%) experienced early discharge, three (10.7%) less erection, two (7.3%) greater erection, and eight (28.5%) physical disturbances in some form or the other. Only one (3.6%) respondent felt a sense of relief.

Change in coital frequency

No change in coital frequency was observed in 68 (75.6%) cases at the time of interview. Of the remaining 22 respondents, 18 (81.8%) reported a decline in frequency due to advancement in age, general weakness, and other complications while four (18.2%) reported increased frequency as a result of the absence of the fear of having more children and an improvement in health and vitality.

Previous use of contraceptives

The use of contraceptives prior to the acceptance of sterilisation plays a very important part in the motivational process. The data revealed that 55 (61.1%) respondents had been regularly using contraceptives before the vasectomy operation. Of these 55 cases, the largest number (33 or 60%) were using condoms, followed by the IUCD (12.8%), foam tablets and coitus interruptus (9% each), jelly + diaphragm and the rhythm method (3.7% each), and jelly alone in 1.8 per cent of the cases.

As regards the duration of use of contraceptives it was found that 43 (78.2%) out of 55 had been using a method for one year, seven (12.7%) for the last one to two years, four (7.3%) for two or three years, and only one (1.8%) respondent had used a family planning method for more than three years. It may be concluded that with the passage of time most of the acceptors dropped out.

Level of satisfaction

Satisfied acceptors can play a very important role in motivating others for the vasectomy operation as they can create more confidence among the community by narrating their own experiences. Thus, an attempt was made to rate the level of satisfaction of the respondents and their future roles as motivators.

It was observed that 42 (46.7%) of the 90 respondents were fully satisfied with the operation, 15 (16.7%) were just satisfied, 8 (8.9%) felt indifferent, 22 (24.4%) were dissatisfied, and the remaining three (3.3%) were fully dissatisfied.

TABLE 1

Level of satisfaction and persons recommending vasectomy

	Person who recommended the operation				
Level of satisfaction	Brother	Close relations	Friends and Colleagues	Neighbours	Others
Fully satisfied	13	5	3	—	1
Satisfied	4	4	6	—	—
Indifferent	1	3	2	—	—
Dissatisfied	—	—	4	3	3
Fully dissatisfied	—	—	2	—	1
Total	18	12	17	3	5

It is quite interesting to note the correlation between the levels of satisfaction and the person(s) who recommended the operation to these acceptors. Table 1 shows that 22 (52.4%) of the 42 fully satisfied respondents had been motivated by their close relations, friends and colleagues, specially by their brothers, while none of the dissatisfied or fully dissatisfied respondents had been motivated by their brothers or close relations. Thus, it may be concluded that there is a positive correlation between the levels of satisfaction of the acceptors and the persons recommending the operation in terms of social relationship.

Also, 63 (70%) of the 90 acceptors stated their intention of recommending the operation to other persons. Of these, 14 (22.2%) said that they would recommend the operation to their brothers, 17 (27%) to close relations, 23 (36.5%) to friends and colleagues, 4 (6.3%) to neighbours, and 5 (8%) to others.

An analysis of the level of satisfaction of the vasectomy acceptors and their future role as motivators is given in Table 2.

It is evident from Table 2 that the degree of recommendation is dependant upon the level of satisfaction of the acceptors, e.g. 95.2 and 73.8 per cent of those who were fully satisfied or satisfied with the operation expressed their desire to recommend it to close relations, friends, etc., while only 24 per cent of those who were not satisfied said that they would recommend the operation, not to their own persons or relatives but to friends and others.

TABLE 2

Level of satisfaction of acceptors and persons to whom the operation would be recommended

Level of satisfaction	Brothers	Close relations	Friends and colleagues	Neighbours	Others	Total
Fully satisfied	10	12	15	2	1	40
Satisfied	3	4	2	—	2	11
Indifferent	1	1	3	1	—	6
Dissatisfied	--	—	3	1	1	5
Fully dissatisfied	—	—	—	—	1	1
Total	14	17	23	4	5	63

Opposition after vasectomy

Sixty-two or 68.9 per cent of the acceptors did not face any opposition, 12 (42.8%) were opposed by their wives, seven (25%) by parents, four (14.3%) by religious leaders, three (10.7%) by siblings and two (7.2%) by friends and neighbours. Thus it may be concluded that wives, parents and religious leaders are among the persons who provide greater resistance than others.

Further analysis revealed that fear of complications arising out of the operation constituted a strong barrier in motivation for vasectomy in 13 (46.4%) of the 28 respondents, seven (25%) were opposed on religious grounds, six (21.4%) on grounds of impotency and only two (7.2%) faced social disapproval.

Factors against vasectomy prior to its acceptance

Psychological readiness is a very important ingredient of the motivational process because whenever an individual is faced with an innovation, he has some factors against it and some in favour of it. In the process of acceptance he weighs these factors and takes action accordingly. In the following table an attempt has been made to evaluate this phenomenon in order of priority.

Priorities given in order or resistance	Fear of complications	Against religion	Impotency	Social disapproval
1.	15(16.7%)	48(53.3%)	22(24.4%)	5(5.6%)
2.	27(30.0%)	40(44.4%)	17(18.9%)	6(6.7%)
3.	32(32.6%)	35(38.9%)	9(10.0%)	14(15.5%)

It is evident from the table that among the three priorities, fear of complications, religious considerations and fear of impotency and social disapproval were arranged in order of resistance in the respondents' minds prior to the acceptance of vasectomy.

Factors in favour of vasectomy prior to its acceptance

Priorities given in order of preference	No worry of additional children	Economic betterment	Better education for children	Higher social status
1.	53 (58.9%)	22 (24.5%)	12 (13.3%)	3 (3.3%)
2.	44 (48.9%)	18 (20.0%)	21 (23.3%)	7 (7.8%)
3.	23 (25.6%)	39 (43.3%)	17 (18.9%)	11 (12.2%)

As regards favourable factors, the three preferences, viz. getting rid of having more children, economic betterment, better educational facilities for children, and higher social status were arranged in order of intensity, in the respondents' minds before undergoing the operation.

Agencies of motivation

Being asked how they had been motivated, 25 (27.9%) reported that Family Planning Workers had been responsible for motivating them; 23 (25.6%) had been motivated by local leaders, 18 (20%) by friends and colleagues, 9 (10%) by doctors (during their visits to the family planning centre), seven (7.7%) by their wives and another seven (7.7%) by relations. Only one case reported that nobody had approached him but he himself was so much influenced by the literature he had read that he decided to undergo vasectomy. Thus it may be concluded that local leaders and friends and colleagues can be effective as non-official agents of motivation for vasectomy.

Summary

The present study is confined to 90 cases who had been operated at Urban Family Planning Clinics in Jaipur City during March 1969 to April 1970 and who belonged to the Muslim community. The study revealed that the average age of the acceptors was 30 years, their average income was Rs. 254 per month, they had an average number of 4.1 living male children and the majority belonged to the educated class. Following vasectomy a few cases experienced complications and change in sexual behaviour. The majority of the respondents felt satisfied with the method, had recommended it and stated that they would recommend it to others. Fear of complications was the strongest barrier in motivation. Also, family planning workers and local leaders proved to be effective as motivating agents.

KNOWLEDGE AND ATTITUDE TO FAMILY PLANNING AMONG THE KUVI-KANDHA

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In the course of carrying out a study on the reproductive behaviour of the Kuvi-Kandha women of Kuttinga, a village in the Koraput sub-division of the Koraput district in Orissa, data were also collected on their knowledge and attitudes to family planning during the field session of December 1965 to February 1966.

The village is bounded by the Eastern Ghats and the Kuvi-Kandhas comprise the bulk of the population and their main subsistence is through agriculture. The women are absolutely illiterate while a few of the men can sign their names only. The other details regarding the tribe have been described earlier.[1, 2] The present paper is limited to the knowledge and attitude to family planning of the Kuvi-Kandha women.

Materials and methods

Data was collected from 171 ever-married women of different age groups through a questionnaire and the personal interview method. Only a few were bilingual and the help of an interpreter was found indispensable.

The village has been provided with one Gram Sevak and a trained midwife from the nearest block development office at Luxmipur. In addition, posters, etc., on family planning are displayed in front of the Kandha settlement. On enquiry it was found that most of them were ignorant about family planning nor did they seem to care to know about it. However, they were first told all about family planning and then their opinions either in favour or against it were recorded.

Results and discussion

Conception and birth of a child are still regarded as a gift of Providence by most of the people. They desire a large number of children and male children are valued more as they look after them in their old age. Not being economically well off does not seem to bother them and when asked as to how all their children would subsist if the family becomes large, the prompt reply was that when a son grows up he clears the hill slopes and practises shifting cultivation. However, a few women reported that their menfolk did not pay any attention to their appeal to abstain from sexual union on the plea that child-bearing is strenuous. They also reported that they were not acquainted with any modern methods of family planning.

Their knowledge about family planning and attitudes towards the same are presented in Table 1.

TABLE 1

Knowledge and attitude towards family planning

Age Group (years)	*Knowledge*			*Attitude*			
	Number	Yes (%)	No (%)	Number	Favourable (%)	Unfavour-able (%)	Indifferent (%)
15-24	41	4.9	95.1	40	—	45.0	55.0
25-34	65	4.6	95.4	65	13.8	72.3	13.8
35-44	29	10.3	89.6	29	13.8	69 0	17.2
45 +	36	19.4	80.6	35	5.7	62.8	31.4
Total	171	8.8	91.2	169	8.9	63.3	27.8

It appears from Table 1 that women in the age groups 35 onwards had a greater awareness of family planning and that their knowledge of the subject was less in the combined age groups 15-34, while the overall percentage was 8.8.

As regards their attitudes to family planning, women in the age group 25-b4 were either against or were more in favour than women of other age groups. To put it more succintly, the women of these age groups were quite able to take clear-cut decisions. Women in the age group 15-24 were more indifferent than others possibly due to their mental immaturity and lack of experience (all the women in this age group are not mothers). Among the women of age group 45 and above a greater proportion was opposed to family planning, a moderate proportion was quite indifferent (31.4%) while a few were in favour of family planning.

The family planning programme in India has been intensified over the last decade, but its impact has not been felt among the tribes living in the interior or inaccessible areas of the country such as Kandha. Many tribes, e.g., the Hill Reddis of Andhra Pradesh[3], the Hos[4], the Asurs[5] and the Kandhas having different ethnic bearings, have a knowledge of indigenous methods of birth control which are practised in exceptional cases. However, this cannot be interpreted as family planning. The ideas of the Oraons of Sunderban[6] on the birth of a child are similar to those of the Kandhas. Data also show that most of the Khasi women[7] are opposed to family planning.

It will obviously take time to make these people realise the purpose of family planning and practise the same because of deep-rooted superstition, lack of education, isolated living, etc.

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POPULATION EDUCATION SHOULD BE INTRODUCED FIRST AT THE PRIMARY RATHER THAN THE SECONDARY SCHOOL LEVEL—A SOCIOLOGICAL APPROACH

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Population education no longer needs an introduction. What it is; why it should exist; what its potential benefits are; these and other introductory questions have already been investigated at length elsewhere (see, for example, the March 1971 issue of this *Journal*). It is now time to discuss, analyze, and evaluate the narrower specifics of how population education should be introduced into the schools, and what its content and methodologies should be. This paper will focus on one of these narrower areas.

As population education programmes begin to be introduced into the school systems of Asian countries, choices must be made among the alternatives for allocating scarce resources. For example, most school systems have neither the personnel nor the funds to enable them to prepare all the necessary curricular materials and to train all their teachers, as would be needed, for the establishments of a *complete* population education programme. In such a situation, the initial emphasis of the programme—and the initial allocation of funds and personnel—should be made where it is likely to prove most beneficial.

If it is necessary to limit—for the present—the development of a population education programme, one of the most reasonable ways of doing so would be to develop the programme only at the *primary* or only at the *secondary* school level. In coming to this decision, numerous factors should be considered, such as the relative quality of the teaching force at each level, the number of students at each level, the different concepts which may be conveyed to children at different ages, and many more. The scope of this paper shall be limited to a discussion of certain aspects of the social change theory and the assistance which these ideas can provide to educators who must make this particular decision.

To place the decision in proper context, let us consider the type of community in which most Asians live, i.e., a village which has a primary school but no secondary school. (As the discussion in this paper develops, it will become clear that the term 'primary school' can be equated with 'the highest level of schooling which exists in the community'; in most communities in Asia, this means approximately four to seven years.) The graduates of the village primary school who do continue their education do so in a secondary school located in a nearby town or city. Let us also assume that the goal of a population education programme is to bring about "rational and responsible attitudes and behaviour" by people in this community with respect to their population situation.[1] Thus, for people in this type of community, can this goal be best achieved if the initial emphasis of the programme is in the primary school within the village or in the urban secondary school which some of the graduates of the village school will eventually attend ?*

Secondary and primary school students : Some differences

The above question assumes that there are certain basic differences between students at the two levels. Obviously, secondary school students will tend to be older; one would also assume from this that they would tend to be closer to childbearing. It is, however, a common practice in rural areas for children to miss a year or more of school (to care for younger siblings, to help with farm work, to recuperate from illnesses), or to repeat grades. It is also not unusual for girls to marry within a year or two of school, regardless of how many years they have finished. As a result, although secondary students are usually closer to their reproductive years than are terminal primary students, this difference is not nearly as great as implied by the difference in grade. In fact, rural upper primary school students may be as close to their reproductive years as are urban secondary school students.

A second basic difference between students at the two levels is that the village school students (who do *not* continue their education beyond the village) are far more likely to remain in their villages than are their fellow-students who further their schooling in the towns or cities. Statistics on the educational level of rural-to-urban migrants nearly everywhere in Asia substantiate this fact.

The third factor which differentiates students—or graduates—of the two levels is the influence which they will have in the future on other, less-educated villagers. Who has a greater effect on village attitudes and behaviour—the secondary school-educated, urban, ex-villager who may return one or more times per year to visit his family and friends, or his less-educated cousin who has completed primary school and then remains throughout his life in the village? The answer to this question is crucial in determining the location and content of a population education programme.

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* It must be stressed again that this paper is not suggesting that population education remain as a primary or secondary level programme. The necessity to *eventually* establish a programme at all levels is strongly affirmed.

A summary of the problem

Those who advocate that population education be introduced first at the primary level are, in effect, assuming that primary school students (who will not continue their education) are more likely to remain in the local community and—being graduates of the highest level of education which their village has to offer—are likely to be its future leaders. On the other hand, those who advocate an initial emphasis on secondary level population education are assuming that secondary students of village origin, although they are likely to move to urban areas, will nevertheless continue to influence village attitudes and behaviour with respect to population. These people, in effect, view the process of social change as occurring on an urban-to-rural, better-to-less educated continuum, and feel that it is presently necessary to concentrate on the urban, better-educated end of the continuum. Which of these arguments is morely likely to be correct? Can studies of the processes of social change shed light on this problem in order to assist educational decision-makers?

The theoretical background

Useful framework within which to classify social change theories is the following:[2] A first type of theory is an *externalistic* one which "looks for the reasons ('causes'. 'factors', or 'forces') of change in any socio-cultural system, in some 'variables' that lie outside the socio-cultural system itself". A second type of social change theory is an *immanent* theory which postulates that any socio-cultural system "changes by virtue of its own forces and properties. *It cannot help changing, even if all its external conditions are constant.* The change is thus immanent in any socio-cultural system, inherent in it, and in-alienable from it". A third type of theory, an *intermediary* or *integral* theory, is a combination of the other two in which the impetus for change comes from both outside and inside a system. This type of theory is probably more reflective of reality, but unfortunately, in practice, tends to be more eclectic than synthetic. The bi-polar division will be used in this paper to more clearly differentiate the two major approaches to social changes—although the conclusion will, in effect, be an intermediary one.

Viewing the 'typical' village described above as a socio-cultural system, the advocate of immanent change would maintain that a population education programme within the village school, based on the village's own perception and understanding of its population problem, can provide the necessary prerequisite for internal change. He would advocate a population education programme at the secondary level, under the assumption that students from this level are more likely to serve as behavioural models for the village and as communication links between the village and the urban community toward which it focuses.

Closely related to the social change theory is a discussion of the person or persons responsible for introducing the change—the 'change agents'.[3] The behavioural change agent may be located either inside or outside the social system he is trying to alter. Internal change agents tend to be members of a *marginal elite*, who are not quite in a position of real power, and yet have the economic, social, political, psychological and intellectual potential to exercise power and sway opinion. Whereas in much of Asia, a dualistic structure of the society is common, with an 'out-group' (the marginal elite) in constant, recognized competition with the 'establishment', it can be expected that the innovators of a new idea will be these "least committed members of the elites."

Rogers[4] defines the change agent more finely, differentiating between the *original innovators* of the change and the *early adopters.* The latter "are a more integrated part of the local social system than are the innovators. While innovators are cosmopolites, early adopters are localites. This adopter category, more than any other, has the greatest degree of opinion leadership in most social systems. Potential adopters look to them for advice and information about the innovation. The early adopter is, considered by many as 'the man to check with' before using a new idea. . . . Because early adopters are not 'too far' ahead of the average individual in innovativeness, they serve as a role-model for many other members of a social system."

Integrating the types of social change theories with the types and roles of change agents yields the following : New ideas, attitudes, and behaviours concerning population can perhaps best be infiltrated into a system via strategies deriving from externalistic theories of social change, and by cosmopolite change agents who are external to the system. These first change agents, as original innovators, may very well be the urban-oriented ex-villagers who occasionally visit their home village. Within the village, the marginal elite (far larger in numbers than the original innovators) are the people most likely to listen to this innovation. Once the original innovator has introduced the new concept, then a different process occurs in which the marginal elite, in the process of becoming the early adopters of the new innovation, alter the outsiders' version of the innovation to one which the culture can more readily accommodate. They, in turn, are the people who legitimize the innovation and spread it throughout the community. At this stage, these change agents are people who are totally within the system, and immanent theories of change are thus more relevant.

Conclusion

For the educator concerned with the establishment of a population education programme, what are the implications of this analysis ? Presumably, both the original innovators and the early adopters could use some form of education about population in order to more fully comprehend the innovation they are introducing to the village. For the cosmopolite original innovator, a programme at the secondary level could help provide him with an understanding of the various ramifications of the population problem, as well as a recognition of the roles he might play as a change agent. For the localite early adopter, a population education programme at the upper levels of primary school would enable him to better comprehend the relationship between population growth and the situation of his family and community. Obviously, both programmes would be valuable, but which more so ?

One possible drawback to the secondary programme is that it may be redundant. The individual who is most likely to become an effective original innovator is the same individual who will be most receptive to other forms of population communication—the radio, newspapers and magazines, various promotions of the family planning campaign, and so forth. Thus, although a school programme might be useful to assist him to synthesize his knowledge of the population situation, such a programme may also be less necessary.

Of greater import is the need to prepare the far larger number of early adopters than original innovators. It should be a relatively simple task to discover the handful of individuals per village needed to perform the initial tasks of population innovation. If necessary, the original innovator role can be partially filled by people specifically prepared for this task, such as personnel of the family planning programme. But the far more difficult role of legitimizing and spreading the innovation throughout the community—the early adopter role —needs a much larger number of aware people in each village. The upper grades of primary shcool provide the best opportunity to reach the community's future marginal elite, and thus prepare them for their role as early adopters of population innovation.

The major implication of this discussion, therefore, is that in an essentially rural society, a village-based school programme—aimed at the early adopters rather than the original innovators—is the strategy by which education is most likely to influence population change at the community level. Given the schooling realities in most Asian countries, a 'village-based' programme means a primary rather than a secondary school programme.

Summary

1. The argument presented in this paper is only relevant where the following are true:

(a) students in the higher grades of the village primary school who will not continue their education to secondary school are nearly as close to their reproductive years as are secondary school students; and

(b) secondary school students of village origin are less likely to return and live in their original village than are primary school students who do not continue their education.

2. The argument was introduced using the following concepts:

(a) *externalistic* theories of social change view change as being introduced, of necessity, from outside a given socio-cultural system; *immanent* theories of social change as being inherent within the system;

(b) *change agents* from outside the system are the *original innovators,* or the introducers (externalistic), of the new ideas and behaviours to a small portion of the village, its *marginal elite*;

(c) the *marginal elite* will serve as the *early adopters* (immanent) of the new ideas and behaviours, altering them to fit into the culture of the village and then spreading them throughout the village.

3. School population education programmes can aim either at the *original innovators* or at the *early adopters.* The level (as well as content) of the two programmes would differ considerably. Specifically:

(a) a school population education programme at the secondary school level is a means to reach the original innovators of new population ideas and behaviour; its content would be oriented towards providing a broad view of the population situation, plus a recognition of the students' potential leadership role in producing population change;

(b) a school population education programme at the village primary school level—and especially in the higher grades of primary school—is a means to reach the early adopters of new population ideas and behaviour; its content would be family- and community-oriented.

4. It would be preferable to develop a population education programme at both the primary and secondary school levels. However, where faced with funding and personnel limitations, it is argued that greater emphasis should be placed on the introduction of population education at the upper levels of primary school. The major reason for this conclusion is the overriding importance of reaching the village's early adopters.

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THE FATE OF SPERMATOZOA AFTER VASECTOMY

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Vasectomy has become extremely popular as a measure of family limitation. It is safe, simple, reliable and in most cases a reversible surgical procedure. Should a need arise in future (due to loss of offspring or spouse) it can be undone and reunion of the vas deferens can be successfully carried out in over 80 per cent of the cases. It will be interesting to examine the normal physiology aspects of reproduction and understand the nature of the compensatory changes evolved by the body after surgical interference.

Normal Physiology

For conception to occur the spermatozoa from the husband must unite with the ovum of the wife after sexual union. During the child-bearing period, a woman, on an average, produces one ovum per month regardless of the frequency of sexual unions. However, in a normal man as many as 30 to 60 crores of spermatozoa are voided in the semen at the time of every semen discharge. When one considers the fact that only one sperm is ultimately essential for conception, one is amazed at this colossal wastage.

The seminal fluid has two components. It consists of millions of spermatozoa suspended in a nourishing medium which also acts as a vehicle for transportation of sperms. In the human body the semen is not produced at one site. The spermatozoa are produced in the testes and the milky fluid is contributed by the secretions of three glands, namely the seminal vesicles, prostate and urethral glands. The paired seminal vesicles and the prostate are situated inside the abdomen below the urinary bladder. These are called the accessory glands of reproduction. The major bulk of the seminal volume is made up of the secretions of these accessory glands. The millions of spermatozoa constitute only a tenth of the seminal volume. Besides many other important biochemical constituents, the seminal fluid contains the fruit sugar, fructose, which is utilized by the spermatozoa for their energy requirements.

The testes have two functions to perform. In themselves they are incapable of functioning unless they are stimulated by the hormones from the master gland—the pituitary. Under the influence of pituitary hormones they produce spermatozoa and the male sex hormone called testosterone. The male sex hormone is responsible for the masculine characteristics such as change of voice, growth of facial, axillary and pubic hair, muscular development, sexual urge and manly vigour and aggressive attitude. It is also responsible for the growth and maintenance of the accessary glands of reproduction mentioned above.

Each testis is divided in about 250 compartments. In each compartment are lodged one to three highly tortuous slender, hollow tubules called the seminiferous tubules. Each seminiferous tubule is 1.0 to 2.5 feet in length and has a diameter of one-sixth to one-fourth of a millimetre. If all the seminiferous tubules are straightened out and placed end to end, their combined length would be 750 feet. Towards the midline the arched seminiferous tubules converge and form a network of collecting tubules called rete testes. From this network of rete testes about a dozen small tubules called efferent tubules carry the spermatozoa from the testes to the adjacent tubular organ—the epididymis. In the upper third of the epididymis the dozen or so of the efferent tubules join together to form the epididymal tubule which again is a highly convoluted tubule of an approximate length of 18 feet. The terminal part of the epididymal tubule acquires elastic and muscular coats and continues as the vas deferens. The testes which are the sites of sperm production are situated far away from the seminal vesicles and prostate. The vas deferens on either side carries the spermatozoa from the epididymis to the vicinity of the vesicle and prostate. The vas deferens is an elastic muscular tube with a smooth internal lining and measures 14 to 16 inches in length. The muscular coats of the vas deferens, by a series of wavelike contractions, propel the spermatozoa to the terminal dilated end called the ampulla of the vas deferens. The spermatozoa are stored in the ampulla prior to ejaculation. The secretions of the seminal vesicles on either side along with the spermatozoa from the ampulla of the vas deferens are poured on the back side of the urethra via the ejaculatory ducts. The ejaculatory ducts are 2-4 cms. in length and run mostly through the substance of the prostatic gland. The prostate pours its own secretions separately in the posterior urethra.

The seminiferous tubules are lined by the germinal cells and the supporting cells. The germinal cells arrive in the tubules in the fourth month of intrauterine life. The germinal cells remain quiescent upto the age of puberty and become active at this period under the influence of the pituitary hormones. These cells by a series of complicated divisions produce spermatozoa. This is a lengthy process. It has been estimated that for the production of spermatozoa from the parent germinal cells a period of 65 days is required. The anatomically mature sperms separate from the lining membrane and are carried along with the testicular fluid to the adjacent tubular organ—the epididymis. The spermatozoa released from the testes are not immediately voided in the semen. Instead they stay for a period of two weeks in the epididymis and undergo physiological maturation and acquire fertilizing ability. The production of spermatozoa is a continuous process and starts at the age of puberty and continues upto the sixth decade of life. In a healthy adult about two crores of spermatozoa are produced daily.

The male sex hormone is produced by groups of cells called the Leydig cells which lie between the seminiferous tubules. They pour their secretions directly in the surrounding blood vessels and hence the male sex hormone is not found in the semen even in traces.

Changes induced after vasectomy

Minimum physiological disturbance is produced after vasectomy. A small piece of vas, one centimetre in length, is removed during the operation and the cut ends are tied. The vas deferens being an elastic tube can be stretched so that the cut ends of it can be trimmed, stretched and re-united if recanalization becomes necessary.

After vasectomy, the spermatozoa continue to be discharged in the semen for six to 24 weeks, though in progressively declining numbers. These are the sperms which were stored in the terminal ampulla before the operation.

The secretion of the male sex hormone remains unaffected. Hence the sexual urge, libido and virility remain unimpaired and impotence never results as a sequel. At one time, some forty years back, Steinach believed that the secretion of the male sex hormone actually improves after the operation and he vigorously advocated this operation for rejuvenation.

Theoretically, the volume of the seminal ejaculate is diminished after vasectomy. However, as only a tenth of the seminal volume is contributed by the testes in the form of spermatozoa, the slight change in volume remains unnoticed. A lay person confuses vasectomy for castration. During castration the testes are either damaged, crushed or removed, the supply of the male sex hormone ceases and invariably impotence is produced.

The process of sperm formation remains undisturbed after the operation. Spermatozoa are normally produced in the testes as before, even years after the vasectomy operation. Here then arises an interesting problem. If the testes continue to produce spermatozoa in millions after the operation and if none can come down in the semen, then what happens to the millions of spermatozoa which are produced ? This problem was investigated by the author at the Family Welfare Bureau.

It has been found that the spermatozoa which are produced in the testes come to the epididymis. In this organ they undergo physiological maturation. However as the vas deferens is interrupted, the sperms can only travel upto the proximal cut ends of the vas deferens. Eventually they age and die in the epididymis which serves as a graveyard for them. Now an interesting mechanism comes into operation. From the surrounding tissues and from the blood vessels hundreds of thousands of scavenger cells migrate into the lumina of the epididymal tubule. These scavenger cells which ingest, digest and dispose of the old dead sperms are called macrophage cells or better still, spermiophage cells. This mechanism operates so long as the obstruction continues to exist. This is not surprising. The human body has a similar mechanism for eliminating old and effete red blood cells from the circulation. Normally the life span of a red blood cell is of 120 days. At the end of this period those red blood cells which have become old and effete are ingested by macrophage cells which are present in the liver and spleen as the blood passes through these organs.

Years after the vasectomy operation, if reunion of the vas deferens is carried out successfully, the spermatozoa once more get their normal outlet. Then the response of macrophages becomes unnecessary and superfluous and indeed within a few months this special arrangement ceases to operate.

APPLICATION OF MAHALNOBIS D^2 IN A STUDY OF TRADITION AND FERTILITY

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Introduction

One of the most important factors influencing the fertility of a population is the desire on the part of parents to have children. "Norms about various aspects of sex and reproduction and marriage are found in all societies and profoundly affect fertility. They may be based on superstition or on soundly based scientific knowledge".[1] "The persons who adhere to traditional ideas in general will also adhere to traditional ideas about fertility planning and family size."[2] Thus, traditionalism constitutes an important variable in the study of developments for checking fertility and its impact on population. With the social and demographic characteristics peculiar to Kerala, a study of traditionalism *versus* fertility of a cross section of its population may be still more important.

The 'traditional distance' is considered as the quantitative expression of the overall difference between groups differing in traditional beliefs and is measured in terms of the difference in the means of the various demographic characteristics of the married women in the groups in general. (The classification of the groups is given later.) In the present study, an attempt has been made to find out how far apart, on the average, are the wives in three different groups—two traditional and the third, the least traditional—with respect to the measurements of factors affecting their fertility and behaviour. A measure of the distances between the traditional groups of people has been obtained

Data

The data used here are from a survey on 'family growth' conducted by the Department of Statistics, University of Kerala.[3] The study is based on 534 interviews with young married women, regarding their family growth patterns. The women interviewed belonged to three selected villages on the outskirts of Trivandrum City, Kerala State, which formed the target area of the 'Action Unit' of the Family Planning Communication and Action Project of the University of Kerala. These villages had the privilege of being well exposed to family planning propaganda. Further, being situated in the suburbs of Trivandrum city they are semi-urban in character. The households were more or less homogeneous with respect to socio-economic status and educational attainments.

Method of study

'Traditionalism', in the Indianapolis study, is considered as a set of such ideas which were generally accepted social norms in the past but have been under challenge in recent times.[2] For the present study a set of 14 statements which were considered as traditional in content, was selected. The measure of traditionalism is the agreement with these. A score value of 1 was given for each statement, thus obtaining the total score for an individual range from 0 to 14, where zero would indicate least traditionalism and 14 the highly traditional. The total sample of 534 women were divided into three groups according to their total score values: highly traditional (G1), traditional (G2), and least traditional (G3).

The "traditional distance" was derived from the concept of "generalised distance" by Mahalnobis (Mahalnobis D^2)[4]. A very important consideration in constructing a suitable measure of group distance is in the choice of various characteristics. The variables selected should have high discriminatory power in the sense that the differences between the groups should be large and statistically significant. Nine factors affecting fertility were used for the calculation of D^2. The factors considered were: duration of marriage (x_1), average inter-pregnancy interval (x_2), number of male live births (x_3), number of living children (x_4), number of male children living (x_5), inter-live birth interval (x_6), number of pregnancies (x_7), number of live births (x_8), and age at marriage (x_9).

Results

The mean values of the above nine characters for the three groups are given in Table 1. It is evident from the table that the variables are clearly associated with the traditional groups, with the exception of average inter-pregnancy interval and average inter-live birth intervals, i.e., x_2 and x_6. A possible explanation can be that the

TABLE 1

Mean values of the nine variables

Group	x_1	x_2	x_3	x_4	x_5	x_6	x_7	x_8	x_9
1	12.89	2.93	2.32	3.90	2.05	3.18	5.03	4.43	17.15
2	11.04	2.54	1.88	3.24	1.68	2.76	3.99	3.66	17.85
3	10.56	2.55	1.73	2.92	1.65	2.50	3.58	3.24	17.84

TABLE 2

The corrected sum of squares and sum of products of the nine variables

	x_1	x_2	x_3	x_4	x_5	x_6	x_7	x_8	x_9
x_1	18948.668	2306.570	2807 569	4510.375	2416.010	2474.562	5364.733	5288.195	–3820.155
x_2	2306.570	1128.415	198.433	339 986	206.190	897.482	207.606	316.541	–678.245
x_3	2807.569	198.433	1158.367	1099.517	1026.636	246.386	1226.340	1263.654	–593.702
x_4	4510.375	339.986	1099.517	1990 641	1081.281	977.425	1996.768	2044.722	–934.900
x_5	2416.010	206.190	1026.636	1081.281	1031 499	266.461	1056.942	1088.801	–588.686
x_6	2474.562	897.482	246.386	977 425	266 461	1206.801	438.813	400.715	–462.357
x_7	5364.733	207.606	1226.340	1996.768	1056.942	438.813	2602.957	2387.897	–1536.066
x_8	5288.195	316.541	1263.654	2044.722	1088.801	400.715	2387.897	2442.026	–1054.714
x_9	– 3820.155	– 678.245	– 593.702	– 934.900	– 588.686	– 462.357	– 1536.066	– 1054.714	–17701.301

highly traditional women observe certain taboos in sexual relations during lactation periods and religiously auspicious days as evidenced in the Mysore population study[5]. Further, among the least traditional group there is a certain amount of planning and they resort to permanent birth control measures like sterilisation, after the attainment of the desired family size.

The corrected sum of squares and sum of products are given in Table 2.

Mahalnobis D^2 is given by

$$D^2 = \sum_{i=1}^{p} \sum_{j-1}^{p} Sij \; di \; dj$$

where Sij is the y^{th} element of the inverse of the variance covariance matrix and di is the difference between the mean values of the i^{th} characteristics in two groups.

The observed values of D are given in Table 3.

TABLE 3

Values of D

	1	2	3
1	0.0	0.0286	0.0384
2	0.0286	0.0	0.0160
3	0.0384	0.0160	0.0

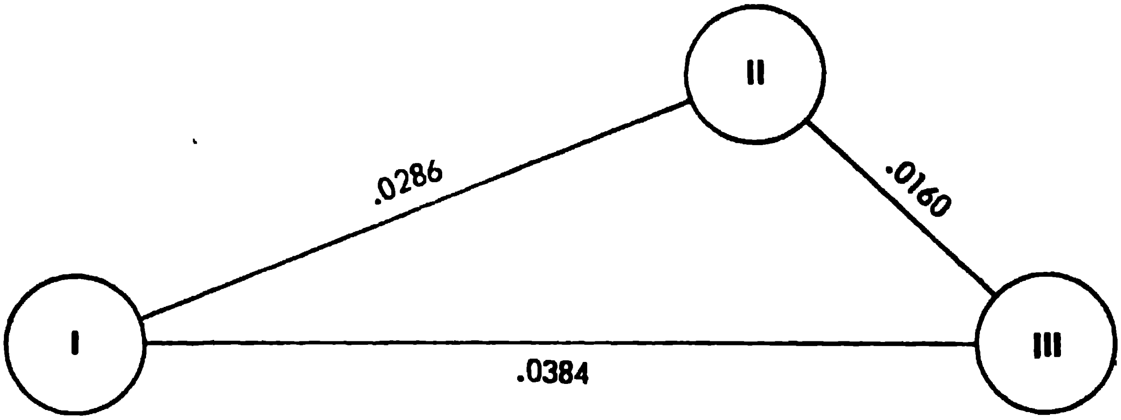
The mutual relationship of the three groups are approximately indicated in Figure 1, where the square root of D^2 represents the distance. There appears a systematic pattern in the distances between the groups. This quantitative expression of group separation shows that with regard to these variables the least traditional groups of women are further away from highly traditional groups. It can be observed from the figure that the distance between the highly traditional and least traditional groups is greater than the distance between the highly traditional and traditional groups, and also that between traditional and least traditional groups.

Conclusion

From the foregoing, it is possible to conclude that the nine variables considered here clearly differentiate the various groups of women according to their adherence to tradition. The distances are

FIGURE 1

THE DIAGRAMMATIC REPRESENTATION OF THE DISTANCES BETWEEN VARIOUS TRADITIONAL GROUPS



I. HIGHLY TRADITIONAL

II. TRADITIONAL

III. LEAST TRADITIONAL

meaningful in their relationship and indicate the relative separation. The study clearly brings out the need for identifying such groups in the population which are rooted in tradition and to evolve better and more effective techniques for educating such groups on limiting family size and to help them to have a broader outlook on matters connected with family building.

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CHANGES IN THE SEX RATIO IN ECAFE COUNTRIES

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Introduction

A change in the sex ratio of a population is a function of three sets of sex differentials, related to the three components of population change, viz., births, deaths and migration. The sex ratio at birth is a relatively stable index, the values of which change over time and between different populations within a relatively narrow range. The sex ratio can be primary (i.e., sex ratio at conception) or secondary (i.e., sex ratio at birth). The primary sex ratio is not accessible to direct observation, and there is no agreement as to whether the primary sex ratio is higher than or the same as the sex ratio at birth.

Christopher Tietze[1] in his studies on the sex ratio in cases of abortion did not find any trend toward masculinity among younger specimens. The actual ratio between males and females appeared to be about the same for abortions from the third to the seventh month of gestation, as it is among viable infants. No excess mortality of males could be demonstrated for this part of pregnancy. Also, there was no evidence for a primary sex ratio materially different from the approximately 106 males per 100 females found among the combined live and still-births. Hypotheses based upon a heavy excess mortality of males during the pre-viable period would seem to be in need of revision.

M. E. Bernstein[2] in his paper on the recent changes in the secondary sex ratio of the upper social strata quoted Winston as saying that the sex ratio at conception is significantly higher than the sex ratio at birth—the lower percentage of males at birth than at conception is significantly higher than the sex ratio at birth—the lower percentage of males at birth than at conception is accounted for by a differential pre-natal mortality bearing more heavily upon the male foetus than the female[3]. The problem of primary sex ratio, however, will probably have to wait for its final solution until more is known about biological factors determining the sex of an embryo.

Sex differentials in overall mortality and in age-specific death rates and their changes over time are the major factors affecting changes in sex ratios of a "closed" population. Generally, in countries with high life expectancies the mortality of males exceeds that of females. In some countries with medium or high mortality rates and early childhood and child-bearing ages, death rates for females are higher than those for males. The pattern of sex differentials in mortality, changes with decreasing mortality or increasing life expectancy, mortality being sex-selective, favouring females over males in the majority of countries.

Migration differentials are more difficult to express in general terms. The sex ratio of a population is obviously affected by international migration only. The population which moves temporarily from the country of origin is usually sex-selective, the males moving out in search of jobs and frequently leaving their families behind in the home country. The bulk of the migrants are generally in the reproductive age-group (20-45 years).

The masculinity ratio will, therefore, be affected by the type of migration, and tend to decrease the M/F ratio particularly among the reproductive age groups. On the other hand, for a country of excessive immigration, the opposite will be true.

Family migration is probably a less frequent type of international migration, unless large-scale movements of population sub-groups take place (e.g., in post Second World War period, in Europe or between India and Pakistan). The effect of this type of migration on the sex ratio will probably be less expressive over the whole span of life.

Besides these demographic components of change in sex ratio, improvements in registration of demographic events and enumeration of population may affect the sex ratio over a period of time.

In the present paper, we intend to study the changes in the sex ratio at birth (secondary sex ratio) and changes in the sex ratio in the age-specific death rates in those ECAFE countries for which data are available.

Sex ratio at birth

Table 1 gives the ratios for some of the ECAFE countries for which data on live births is available for the years 1955 and 1965. The sex ratio at birth usually varies between 104 to 107 males per hundred females[8]. The calculated values for 1955 show that for Brunei, India, Hong Kong, Philippines, Thailand, Japan and Western Samoa the sex ratios are higher than the expected values. For the years around 1965 only India, Brunei, Thailand, Philippines and Western Samoa have a higher M/F ratio at birth than the expected values. Again, the sex ratio at birth for Burma, Ceylon, Ryukyu Islands, Singapore, New Zealand, Australia and Taiwan are more or less the same for the years 1955 and 1965. For the rest of the countries, the sex ratio

TABLE 1

Sex ratio of reported live-births around 1955 *and* 1965 *in some of the ECAFE countries*

Country	Year	Sex ratio M/F 1000	Year	Sex ratio M/F 1000
Brunei	1955	1084.5	1964	1138.1
Burma	1955	1059.4	1964	1047.7
Ceylon	1955	1036.2	1964	1032.9
Hong-Kong	1955	1095.8	1964	1060.3
India	1956	1102.9	1963	1118.8
Philippines	1956	1118.1	1963	1207.9
Thailand	1955	1141.2	1963	1114 1
Japan	1955	1057.8	1965	1052.9
Ryu Kyu Islands	1955	1032.4	1964	1074.1
Singapore	1955	1052.6	1966	1056.1
New Zealand	1955	1060.3	1964	1062.0
Australia	1955	1051.5	1966	1059.5
W. Samoa	1956	1093.8	1964	1154.6
China (Taiwan)	1955	1060.4	1965	1058.3
ECAFE		1100.2		1102.5

Source : 1. *U N Demographic Year-Book*,, *1959*, pp 229-38
2 *U.N Demographic Year-Book*, *1965*, pp 541-47
3 *U.N Demographic Year-Book*, *1966*, pp 251-56.

varies (increasing and 'or decreasing for the two different years).

Variations in the sex ratio at birth may be due to the following factors :

(a) *The Genetic Factor* : One specific genetic characteristic that is said to be associated with the sex ratio at birth is the blood group according to the ABO classification. A study by Cohen and Glass[4], shows a significantly low sex ratio among all off-spring of mothers of blood group A and among the total off-spring belonging to blood group A irrespective of the mother's type, and a significantly high sex ratio among all off-spring of "B mothers" and among the "B off-spring" of all mothers. Both findings indicate the low frequency of males among the A off-spring of A mothers and the high frequency of males among the B off-spring of B mothers[5].

Another factor which may affect the sex ratio is the parity distribution of births. Some studies have shown that the sex ratio of first order births is higher than that of higher order births even though the observed differences are not more than one unit[6, 7].

The age of the mother is another factor that may influence the sex ratio at birth. For instance, McMahon[8] observed a "tendency for the sex ratio among live births to decrease as the age of the mother increases", and a slightly greater tendency for the first born children to be male than for the later born children".

(b) *Socio-economic factors*: Socio-economic factors may produce sex ratio differentials in several ways. Firstly, in communities where family limitation is practised, an inverse relation between socio-economic status and fertility has been noticed. This means that among higher socio-economic groups, lower order births predominate, bringing in their wake a higher sex ratio. The predominance of male births among higher socio-economic groups in western countries has been explained by their smaller than average number of children and lower rate of prenatal mortality. Other factors usually associated with higher socio-economic status like improved nutrition and health conditions, lower the still birth ratio and differences in abortion rates generally act in the direction of increasing the masculinity ratio at birth[9].

A theoretical study of the impact of family planning on the sex ratio ; based on models, showed that the overall effect of birth control on sex ratio will, among other things, depend upon the particular kinds of preferences for male or female off-spring that influence the married couple in the population. The particular ways in which these preferences affect parents in their decisions, and the effectiveness with which these decisions are carried out will eventually decide on the direction and extent of the changes in sex ratio at birth.[10]

(c) *Errors due to registration*: In most of the ECAFE countries the registration system is poor and the data incomplete. A sex-selective registration due apparently to a number of cultural factors affects sex ratio at birth and when an infant dies shortly after birth, non-registration of both the birth and death is likely. If all the children who die shortly after birth remain unregistered, higher mortality of male infants than female will cause greater under-registration of male births. On the other hand, it may also happen that if the birth of a child is registered his death will have a better chance of of being registered and hence male babies have a better chance of being registered and their deaths may also be registered completely.

The other possible reason is the misreporting of some still-births as live-births and vice-versa. If the still-birth is reported as a live birth then the total number of live births will increase, and as we know that the number of males at birth are more than females, it is expected that the sex ratio at birth will go up ; and in the other case it will go down. For countries like India, Thailand, Philippines, etc., the high sex ratio at birth is due to the under-registration of female births.

For India, the report of the 1951 Census states "there is a traditional fondness for male issues in most parts of the country and a corresponding dislike for female children. All the affection and care is bestowed on male children but female children are not much cared for[11].

The 1946 Census report of Ceylon shows that the fertility of Ceylonese women is on the decline because of birth control methods. Again, the variation in the sex ratio from 1953 to 1963 was due to the under-registration of female births[12] at the earlier date. In countries like Australia, New Zealand, Japan and Taiwan where the registration system is known to be reliable and complete the variation in sex ratio is not much from around the year 1955 to 1965.

Table 2 shows that for Australia and New Zealand the sex ratio of live births showed a slight increase from the year 1955 to 1965.

TABLE 2

Sex ratio of late foetal deaths and late foetal death ratio

Country	Year	Late foetal death ratio	Year	Sex ratio of late foetal deaths
Japan	1955	30.8	1955	1296 1
	1960	30 8	1960	1273.2
	1963	27 0	1963	1292 4
	1965	21 9	1965	1266.0
New Zealand	1955	16.0		
	1960	14 0	1960	1122.0
	1963	12.7	1963	1096.6
	1965	11 9	1964	1065.9
	1966	11.1		
Australia	1955	15.4	Not available	
	1960	14.4		
	1963	12.6		
	1964	11.8		

Source : 1. *U N. Demographic Year-Book, 1965*, pp 622-26
2. *U.N Demographic Year-Book, 1967*, pp 260-62
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4. Health and Welfare Statistics Division, Minister's Secretariat, Ministry of Health and Welfare, *Vital Statistics of Japan, 1955 to 1965*, Vol I.

The late foetal death ratio as well as the sex ratio of late foetal deaths for these two countries decreased during the period of observation. The slight increase in sex ratio may be due to a changing proportion of pregnancies ending in live births. Due to a higher sex ratio of still-births it is probable that the decrease in pregnancy wastage will save more male than female infants and consequently the sex ratio at birth may slightly increase. However, though Japan showed a decrease in both the ratio of late foetal deaths and the sex ratio of the late foetal deaths and the sex ratio of the late foetal deaths, the sex ratio of live births decreased from 1955 to 1965. This phenomenon remains to be explained.

Impact of changes in mortality

With the improvement of health conditions and, in some countries, with increased standards of living, the expectation of life at birth for both males and females has increased over the past decades. For the majority of countries the life expectancy at birth is higher for females than for males. The gap between female and male expectations of life at birth generally increases as the expectation of life for both sexes increases; the mortality rate for females normally falling faster than that for males. Hence the sex ratio of the sex and age specific mortality rates should increase from one period of time to another.

Out of our group of countries, Taiwan, India and Ceylon show the highest yearly average increment of life expectancy at birth, closely approaching one year of life expectancy per calendar year. Out of the three countries, the gap between the male and female life expectancy at birth existing at the beginning of the respective period of observation somewhat narrows in the case of Taiwan. Here evidently, the gain from mortality decrease favours males more than females as seen from Table 3. The age groups having increases in the ratio q_x^m/q_x^f are indicated in Table 3-A. The increasing sex ratio of the sex and age specific death rate[3] shows a more favourable mortality development for female children and young adults. However, for the other age-groups, faster decreases in early childhood and adulthood male mortality rates than those for females are responsible.

Similarly in India, the increase of life expectancy at birth, further widens the gap between males and females in spite of the more favourable mortality conditions of female infants and pre-school children. In all other age-groups, female mortality decreased at a slower pace than that of males. This slowing down of female mortality-decrease is sufficient to further point out the disadvantage of female life expectancy at birth.

The disadvantageous position of females in Ceylon reflected by adverse life expectancy at birth in 1945-47, disappeared over the last 15 years, and in 1963, life expectancy at birth was slightly higher for females than males. If we look into the changes in mortality as reflected by the sex ratio of mortality rates it is apparent that with

TABLE 3

Differences in life expectancy between the two sexes at birth and at age 15

Country	Life tables for years	Life expectancy				Difference in life expectancy between sexes (F-M) at earlier and later periods	
		at birth		at age 15			
		M	F	M	F	$\overset{o}{e}_{o}$	$\overset{o}{e}_{15}$
Taiwan	1936/40 1956 58	41.08 60.17	45.73 64.22	41.23 50.71	46.44 55.13	4.65 4.05	5.21 4.42
Increases in life expectancy over the period		19.09	18 49	9.48	8.69	—	—
Korea	1956/60 1961	51 12 54.92	53.73 60.99	46.13 46 66	47.81 52.68	2.16 6.07	1.68 6.02
Increases in life expectancy over the period		3 80	7 26	0.53	4.87	—	—
West Malaysia	1956/58 1966	55.77 63 13	58 18 66.04	49.62 53.90	51.09 56.25	2.41 2.91	1.47 2.35
Increases in life expectancy over the period		7.36	7 86	4.28	5.16	—	—
India	1941/50 1951/60	32.45 41.89	31.66 40 55	36.24 40.99	36.56 39.61	—0.79 —1.34	0.32 —1.38
Increases in life expectancy over the period		9.44	8.89	4.75	3.05		

Country	Life tables for years	Life expectancy at birth M	Life expectancy at birth F	Life expectancy at age 15 M	Life expectancy at age 15 F	Difference in life expectancy between sexes (F-M) at earlier and later periods e^{o}_{o}	Difference in life expectancy between sexes (F-M) at earlier and later periods e^{o}_{15}
Ceylon	1945/47	46.79	44.72	46.28	44.46	—2.07	—1.82
	1963	62.55	62.95	54.87	55.00	0.40	0.13
Increases in life expectancy over the period		15.76	18.23	8.59	10.54	—	—
New Zealand	1955/57	68.20	73.00	55.95	60.24	4.80	4.29
	1960/62	68.44	73.75	55.87	60.73	5.31	4.86
Increases in life expectancy over the period		0.24	0.75	—0.8	0.49	—	—
Australia	1953/55	67.14	72.75	54.72	59.90	5.61	5.18
	1960/62	67.92	74.18	55.07	61.01	6.26	5.94
Increases in life expectancy over the period		0.78	1.43	0.35	1.11	—	—
Japan	1955/56	63.63	67.76	53.17	56.96	4.13	3.79
	1965/66	68.09	73 30	55.31	60.03	5.21	4.72
Increases in life expectancy over the period		4.46	5.54	2.14	3.07	—	—

Source : 1. *Life Tables for West Malaysia, 1966*, Department of Malaysia, Kuala-Lumpur, pp 12-13, 20-21.
2. *The 9th Abridged Life Table, Japan 1955-56*, pp. 6-11.
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TABLE 3-A

Age groups having increase/decrease in q_x^m/q_x^f *over the specific period in selected countries of the ECAFE region*

Country	Period	Increases	Decreases
Taiwan	1936/40 to 1956/58	5-9, 10-14, 15-19, 20-24, 55-59, 60-64	0, 1-4, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54
Korea	1955/60 to 1961	0, 15-19, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64	1-4, 5-9, 10-14, 20-24, 25-29
West Malaysia	1956/58 to 1966	5-9, 10-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 50-54, 55-59	0, 1-4, 45-49, 60-64
India	1941/50 to 1951-60	0, 1-4	5-9, 10-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64
Ceylon	1945/47 to 1963	0. 5-9, 10-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 60-64	1-4, 55-59
New Zealand	1955/57 to 1960/62	1-4, 10-14, 15-19, 35-39, 40-44, 45-49, 50-54, 55-59	0, 5-9, 20-24, 25-29, 30-34, 60-64
Australia	1953/55 to 1960/62	0, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64	1-4, 5-9, 10-14, 15-19, 20-24
Japan	1955/56 to 1965/66	0, 1-4, 5-9, 10-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64	

the exception of early childhood almost throughout the whole life span females profited more though mortality decreases than males..

The second group of countries with a high increment of lite expectancy at birth (between 0.5 but less than 1.0. per calendar year) comprises Japan, Korea and West Malaysia. In all three countries the females gained more in years of expected life than males, the gap being substantially wider in case of Korea, somewhat less in Japan and only very modestly increased in case of West Malaysia. In all these countries it was due to favourable development of mortality rates in childhood and early adulthood. (In case of Japan though, the changes extended over the entire life-span.)

In the third group, we find only two countries with very modest increases in life expectancy at birth, namely Australia and New Zealand. In both these countries, it was predominantly adulthood and older ages which have shown more favourable development. The increase in the gap between the life expectancy of males and females in both these countries was relatively small (around 0.5 years). Generally speaking, in most of the countries under observation, the sex ratios of the mortality rates indicate that, as elsewhere in the world, improvements in health have affected the female population more than the male. The present study indicates a less favourable development in this respect only in the case of India and Taiwan. On the other hand, a more favourable situation was observed in Japan and Ceylon, where throughout the whole or almost the whole life span, mortality rates improved faster for females than for males.

Conclusion

Two aspects of the sex ratio, viz., changes in sex ratio at birth and in the sex ratio of mortality rates in some of the ECAFE countries were analysed.

In the majority of the countries, the changes in the M/F ratio of live births seem to reflect variations in the completeness and reliability of the registrations of births, rather than changes due to biological or social factors. The hypothesis showing a relation between the sex ratio with respect to live births and decreasing still-births expressed with respect to Australia and New Zealand, would in our opinion deserve verification, possibly based on analysis of models.

The observations on the M/F ratio of sex and age specific death rates are generally indicative of a more favourable impact of improving health and living conditions on mortality levels of females than of males and seem to hold true in the majority of the countries under observation. Lack of reliable causes of death statistics makes it virtually impossible to analyse further the health and possible social variables, which contribute to the sex-selective improvements in mortality.

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"BAITHAKS" AS A CHANNEL OF COMMUNICATION IN A RURAL AREA

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The preferred arrangement for family living in the rural areas around Delhi involves two residences—one for the female members and another for the male members of the family. The former is called a "ghar" and the latter, or the men's quarters is locally known as a "baithak" or "Haelli".

A baithak may be defined as a house or a room used solely by men during the day and night. Womenfolk generally do not visit a baithak, and when they do, it is only for replenishing drinking water, for sweeping the floor, or for similar domestic chores. In order to provide privacy to the womenfolk, baithaks are usually constructed at a distance from ghars, but when the two adjoin each other, the baithak generally opens onto the street and is relatively public.

The baithak is regarded as a prestige symbol by the rural folk. Besides raising the status of its owner, the baithak provides opportunities and facilities for regular and active social gatherings for the village folk. It also serves as a place for according receptions to "batuaes" (in-laws) and other relatives who frequently visit it. Often, cattle also find a place here beside their owners, though in some cases, cattlesheds ("naura" or "ghaer") may be separated from baithaks.

After the day's work is done, or whenever they are free, the rural folk meet at the baithak to discuss their everyday problems or to discuss various issues ranging from the national to the local level. "Hookah smoking" constitutes an indefeasible part of a baithak. The villagers are thus drawn to a baithak, either for rest, or for sharing information or for gossiping around a "hookah". If there is a visitor, a fresh hookah is prepared and offered to him. The items commonly found in a baithak are a few cots, a "matka" (an earthen vessel for storing drinking water), and a hookah.

The existence of baithaks in rural areas, is significant from the point of view of family planning or other welfare programmes, as these meeting places can form good centres of discussion where information may be shared by securing the participation of different sections of the community. The present study was conducted in order to find out the characteristics of the people who visit the baithaks and to explore the possibilities of involving them in various welfare programmes.

Methodology

Village Daryapur, with a population of 840 (in 1969) was selected for the study. The village is situated at a distance of 10 km. from Najafgarh town and is connected with it and Delhi by a pucca road.

Information regarding the population characteristics of the village, its caste distribution, number of baithaks, etc., was collected from the village record books maintained at the Primary Health Centre and verified by visiting the village under study. Keeping in view the nature and scope of the investigation, groups in different baithaks at different times of the day were observed. The observers did not participate in the discussions but merely recorded the nature of the discussions which took place among the inmates of the baithaks. Other information, e.g., the reasons for visiting baithaks, etc., was collected by interviewing 45 villagers, selected at random, with the help of an interview guide.

A caste-wise break-up of the population indicated that Darypur is predominantly an Ahir Village, 62.4 per cent of the population being Ahir. Of the remaining, 21 3 per cent were Harijan; 6.6 per cent Lohar; 5.5 per cent, Brahmin; 3 0 per cent, Kumhar; and 1.4 per cent were Nais. The major occupation of the villagers was agriculture.

Of the 103 families in the village, about 59 per cent owned baithaks. Table 1 gives a caste-wise distribution of baithaks.

TABLE 1

Ownership of baithaks by caste

Caste	Number of families	Number of baithaks	Percentage of families who own baithaks
Ahir	59	41	69.5
Harijan	25	9	36.0
Lohar	7	4	57.0
Brahmin	7	5	71.4
Kumhar, Nai and others	5	2	40.0
TOTAL	103	61	59.2

Though the ownership of baithaks by caste showed considerable variation, a sizeable number of families possessed their own baithaks. On an average, every 14 persons in the village had a baithak.

Customs followed in baithaks

Certain customs are rigidly observed in the baithaks. By tradition, a certain pattern of behaviour is expected of the members of different castes. A knowledge of some of these customs would allow a proper understanding of the importance of baithaks in this rural area.

Apparently, members of all castes are allowed to participate in these gatherings, though certain rules have to be observed. One of these relates to the seating arrangements, e.g., a person belonging to certain castes like Harijans, Chamars, Dhanak, Jogi, etc., cannot sit on a cot but is expected to sit on the floor, when he visits a baithak belonging to a person of higher caste like Brahmins, Mahajans, Jats, Ahirs, etc. Also, when a member of a high caste visits the baithak of a low caste person, he is offered a separate cot and no one belonging to a low caste can sit with him on the same cot. Again, an elderly person is made to sit on the right side, irrespective of economic status. It is also the custom, that if the son-in-law of the owner, visits a baithak and stays there, he is offered a separate cot which is generally not shared by others.

According to another custom, restrictions have been placed on the sharing of hookahs with members of some castes. Table 2 gives an idea of the castes who share their hookahs with each other, those who do not prefer to share them with members of other castes and those who are forbidden to share them with members of castes other than their own.

Table 2 thus indicates that Brahmins and Mahajans do not share their hookah with members of other castes while Jats, Ahirs, Rajputs, Gujjars, Lohars, Sunars and Sainis, share it among themselves.

The denial of the sharing of the hookah to members of certain castes creates social distance among the villagers and restricts their movement in the community. The villagers, therefore, prefer to move in baithaks belonging to members of their own caste, where they are assured of equal status. Besides, it is not only the members of a high caste who forbid low caste people to share their hookah, this distance is maintained among the lower castes as well, e.g. Chamars deny this privilege to Dhanaks who in turn refuse to allow Bhangis to share their hookah.

Communication in baithaks

There was one radio set to every ten baithaks in the village. Whereas baithaks belonging to Brahmins, Lohars, etc., did not possess radio sets, five of the 41 Ahir baithaks and one of the nine Harijan

TABLE 2
Sharing of hookahs by caste

Hookah belonging to	is shared by	Castes which do not share	Castes which are not allowed to share
Brahmin	Brahmins only	—	All other castes
Mahajan	Mahajans only	Brahmin	All other castes
Jat	Ahir, Gujjar, Jat, Khati, Lohar, Rajput, Saini, Sunar and vice versa	Brahmin, Mahajan	Bhangi, Chamar, Dhanak, Nai
Ahir	Ahir, Gujjar, Jat, Khati, Lohar, Saini, Sunar, Rajput and vice versa	Brahmin, Mahajan	Bhangi, Chamar, Dhanak, Nai
Nai	Nai only	Ahir, Brahmin, Gujjar, Jat, Khati, Lohar, Mahajan, Rajput, Saini, Sunar	Bhangi, Chamar, Dhanak, Nai
Chamar	Chamar only	Ahir, Brahmin, Jat, Khati, Lohar, Mahajan, Nai, Rajput, Saini, Sunar	Bhangi and Dhanak
Dhanak	Dhanak only	Ahir. Brahmin, Chamar. Jat, Khati, Lohar, Mahajan, Nai, Rajput, Saini, Sunar	Bhangi
Bhangi	Bhangi only	Ahir. Brahmin, Chamar, Dhanak, Jat, Khati. Lohar, Mahajan Nai, Rajput, Saini, Sunar	—

baithaks had radios. One baithak also received a daily newspaper, though irregularly.

The installation of receiving sets in baithaks provides a channel which keeps the villagers in touch with external developments, besides providing entertainment. Radio-listening in these baithaks becomes a group experience. However, the presence of radio sets in baithaks restricts their use by women-folk, who do not as a matter of course, visit the baithak and are thus alienated from its impact.

Reasons for visiting baithaks

Fortyfive villagers selected at random were interviewed to find out the reasons for which they visited baithaks. Their replies revealed that their visits were mainly for recreational purposes such as to play cards, smoke, gossip, etc. Notably, radio-listening was not mentioned as a reason for visiting baithaks. They also went there to seek advice and guidance from experienced fellow villagers, or to discuss and decide collectively about matters facing a particular section of society, all of which are inter-related. Especially during the election period, a number of groups were seen in the different baithaks, discussing their future voting behaviour, and it is at such gatherings that the villagers debate on the merits and demerits of contending candidates and of their support.

Attendance in baithaks

Though there were 61 baithaks in the village, all were not equally popular. The gatherings in some were limited to close relatives and a few friends whereas others were visited by a large number of persons.

The attendance in the various baithaks at different times of the day was noted. It was hoped that this information would provide an idea of the extent to which these gatherings could be involved in various programmes and the utility of doing so.

It was observed that during the morning hours, the gathering was quite small and mainly consisted of older people who are not in a position to work in the fields. The average attendance in the afternoons was about two to four and consisted of a few villagers who had returned from the field. The maximum number of villagers were present in the evening. The group consisting of four to seven persons also included villagers who had returned from their working places outside the village.

Thus, a comparatively large proportion of the male population would have the opportunity to participate in programmes organised during the afternoons and evenings. Also, the service class of people who leave the village at about 8 a.m. and return around 6.30 to 7.30 p.m. would also be available during the evenings.

It was also found that though 41 per cent of the 103 families residing in the village did not own baithaks, their male members spent some of their spare time in neighbouring baithaks. On an average, the villagers were found to spend about four to five hours every day in baithaks.

The attendance in the baithaks showed a seasonal variation, e.g. during the ploughing season or "buaai", which normally begins in November and continues up to December during winter, and from the last week of June to the last week of July in summer, the villagers are busy in the fields and are only found in the villages to some extent in the afternoons, and in the evenings. On the contrary, "Katai" or the harvesting season which lasts from the last week of March to Mid-May and from September to October, is the busiest period of the year, when the women and small children too help in the fields The menfolk usually stay on in the fields at night and visit their homes only occasionally, food being provided to them in the fields by their womenfolk.

Thus, during such periods, the rural folk who are mainly engaged in agricultural work, may not be available for participation in programmes organised for them. It was also gathered that on "amavasya" or moonless nights, the villagers do not work in the fields—this offers an opportunity to contact villagers in large numbers.

Some baithaks claim wide membership

In a large number of baithaks, the gatherings were limited to family members, relatives and close friends of the family, therefore providing limited scope for wide contacts, but an appropriate opportunity for holding discussions in small groups under intimate conditions.

On the other hand, a few baithaks were visited by a comparatively large and varied section of the community. In Daryapur, six such prominent baithaks were identified—four belonged to Ahirs, and one each to a Harijan and a Chamar. Three of the Ahirs were agriculturists and one was a businessman. Of the former, one was an ex-army man and a Sarpanch of the village, the second was an ex-Pradhan and the third, an influential and prominent personality of the village, while the businessman was a prominent political figure of the village and its surrounding area. Both the Harijan and Chamar who also owned baithaks which were quite popular in the village, were engaged in labour and wielded great influence in their respective communities.

Thus the persons who owned the baithaks enjoyed local influence in varying degrees over certain sections of the community and each prominent caste in the village had its own baithak where its members could discuss their specific problems. The villagers sought their advice and guidance when they were in difficult situations. Programmes organised in baithaks belonging to high caste members may thus ensure the participation of that segment of the community but may create social and psychological barriers in the minds of others and adversely effect their participation. Besides the caste system, factionalism may also create serious problems in obtaining widespread involvement of the members in some baithaks.

The presence of a sizeable number of villagers, comprising of family members, relatives, friends and elderly persons who are available in baithaks thus provides an opportunity for contacting them simultaneously and is of importance for such programmes, as aim at involving all the above members and encouraging them to take a decision. However, for certain programmes, this heterogeneous composition of the group places a strain on the participants, e.g. that of family planning. It is imperative for the success of this programme that the subject should be discussed in a free and frank way. However, social customs seem to prevent an open discussion of the topic in these baithaks. The subject may thus be introduced in general in such gatherings, to create an awareness though the participants would not come forward to discuss their specific problems in the presence of close and elderly relatives.

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DEMOGRAPHIC CHANGES AMONG ACCEPTORS OF FAMILY PLANNING*

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A review of the demographic transition of Western countries indicates that at one time these countries also had birth and death rates which were as high as those observed in most of the Asian, African and Latin American countries today, and that it took more that a hundred years for them to shift from the *old balance* of high birth and high death rates to the *new balance* of low birth and low death rates. The decline in fertility and mortality experienced in Western countries was mainly an end product of advanced economic and social development.

India, though in the process of economic and social development, cannot afford to wait till she attains fuller, advanced economic and social development, which would result in a natural decline in her family size, as was the case with Western countries. This has naturally compelled India to try and balance speedily the existing birth rate with the rapidly declining death rate, by way of advocating and motivating couples for birth control on a nation-wide basis. As a consequence of the large-scale family planning programme of the Government of India, some parts of the country have already recorded a decline in fertility. Baroda city is one place where the birth rate has gone down from 40.97** per thousand population in 1960-62 to 33.51** in 1968-70. This paper examines some of the demographic characteristics, and the changes therein, over a period of time, of acceptors of family planning in Baroda city.

Though India's family planning programme dates back to the year 1951-52, the beginning of India's First Five-Year Plan, intensive efforts were initiated only since 1965. Thus, in order to find any demographic changes among family planning acceptors, the demographic characteristics were considered at two points of time, viz., in the earlier stages (1965-66) and the later stages (1968-69) of the intensive family planning programme. As a measure of the demographic change in the later stages of the intensified programme the mean age and mean number of living children at the point of acceptance of

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* This paper was presented at a seminar on 'Family Planning in Medical Curriculum', organised by the Directorate of Health, Government of Gujarat, Ahmedabad.

** Based on the records of births of the Municipal Corporation of Baroda specific family planning methods and the changes therein at the two stages of the intensified programme have been studied separately.

The sterilisation programme

That tubectomy was very popular in Baroda city during 1966, is obvious from the fact that during that year approximately nine tubectomies were performed for every two vasectomies. This ratio between vasectomy and tubectomy, however, roughly came down to 2 : 3 in 1968.

The mean ages at sterilisation for males for the years 1966 and 1968 were 36.02 and 34.51 years respectively while for females, mean ages of 31.25 and 32.02 years were recorded for the respective years.

Again, the difference in the mean number of living children of sterilised males (4.06) and sterilised females (4.56) was not very marked in the year 1966, though even this small difference was found to be statistically significant. The difference in the mean number of living children of sterilised males (2.87) and sterilised females (4.21) in the year 1968, however, seems to have widened. It therefore appears that males accept sterilisation as a method of family planning at a comparatively lower parity than females. On the other hand, the apparent difference of about three to five years in the mean ages at sterilisation of males and females may either be a consequence of the traditional difference between the husband's age and the wife's age (by about 4 to 5 years in India) and/or that the man probably accepts vasectomy at a comparatively younger age than that of the husbands of tubectomy acceptors.

Further, the mean number of living children at the time of sterilisation for both males and females also showed a decline over the two-year period under consideration. But the mean age of acceptance of tubectomy in 1968 (32.02) was slightly higher than the mean age of acceptance in 1966 (31.25) in spite of the fact that there was a decline in the mean number of living children (from 4.56 to 4.21) over this two-year period.

The data thus revealed that the changes in the mean age and the mean number of living children at the time of sterilisation, of both males and females, from 1966 to 1968, though very small, were statistically significant. In other words, sterilised males in 1968 (later stages of the programme) accepted sterilisation at a comparatively younger age and had fewer living children as compared to those who took the operation in 1966 (earlier stages of the programme). On the other hand, sterilised females in 1968 accepted tubectomy at a slightly higher age but had fewer living children as compared to those who accepted the method in 1966.

The IUD programme

It is obvious from the percentage age distribution of IUD acceptors in Baroda city for 1965-66 and 1968-69 that the acceptors were concentrated in the broad age group of 20 to 34 years.

TABLE 1

Percentage age distribution of IUD acceptors in Baroda city during 1965-66 *and* 1968-69

Age group (years)	Percent acceptors	
	1965-66	1968-69
15-19	1.44	3.49
20-24	31.16	38.18
25-29	37.08	36.82
30-34	19.76	15.30
35-39	8.26	5.00
40-44	2.10	0.91
45-49	0.20	0.30

Table 1 indicates that there is a tendency among the acceptors of the IUD in the later stages of the programme (1968-69) to go in for it at a comparatively younger age. The modal age of acceptors seems to have shifted from 28.7 years in 1965-66 to 20.2 in 1968-69.

The mean age and the mean number of living children of the acceptors in 1965-66 was found to be 27.97 years with 3.06 children respectively, whereas the respective figures for those who accepted the device in 1968-69 were 26.70 and 2.33 respectively. The difference in the mean ages and the mean number of living children of the early and the later acceptors of the IUD was found to be statistically significant. In other words, there was a definite trend among the acceptors in the later stages of the programme to adopt the method at a comparatively younger age and when they had fewer living children.

The conventional contraceptive programme

The age distribution of conventional contraceptive users revealed that roughly 72 per cent of the users belonged to the age group 20-29 and about 89 per cent of them were between 20 to 34 years of age.

The mean age and mean number of living children of the acceptors in the year 1965-66, was found to be 26.28 years and 2.62 respectively, whereas the mean age and mean number of living children of the acceptors of this method in 1968-69 was 26.31 years and 2.44 respectively

The difference in the mean ages of the users of these methods over this period of time was not statistically significant or in other words, there was absolutely no difference in their mean ages during the early and the later stages of this programme. However, the difference in the mean number of living children was found to be statistically significant and indicated that those who accepted conventional contraceptives in 1968-69 had fewer living children.

It may thus be concluded that in spite of both the IUD and vasectomy programmes, there was a tendency among the acceptors, in the later stages of the programme, to adopt either of these methods at a comparatively younger age and when they had fewer living children as compared to those who accepted these methods in the earlier stages of the programme. However, conventional contraceptives and tubectomy were accepted at almost the same or higher ages but with fewer living children, in the later stages of this programme.

Overall demographic change

The overall demographic change involves complex processes. In addition to the family planning programme there may be several socio-economic and other variables which may be directly or indirectly responsible for bringing about a demographic change over a period of time. It is thus not an easy task to isolate the impact of family planning alone, in bringing about a demographic change. Therefore, an attempt was made to assess the demographic change due to a combination of a variety of factors. As the change envisaged would partly be due to the family planning programme and partly due to other factors, it was decided to assess the change (if any) before and during the later years of the intensive programme.

The measure of an overall demographic change in the population following intensification of the family planning programme, would then, require a study of the following factors :

(i) Has the mean number of live births at each quinquennial age group of a cohort of currently married women, who had a live birth (in 1960-62) before the intensive family planning programme, reremained constant/increased/declined in comparison to a cohort who had a live birth in the later part of the programme (in 1968-69) ? If there has been any change, in which age group has the mean number of live births shown the highest decline/increase ?

(ii) Has the mean age at each parity of a cohort of currently married women, who had a live birth before the intensive family planning programme (in 1960-62) remained constant/increased/declined in comparison to a cohort who had a live birth during the later years, in 1968-69; and if there has been any change, at which birth order has the mean age shown the highest decline/increase?

(1) *Mean number of live births at each quinquennial age group*

Table 2 indicates that there was no change in the mean number of live births to women in the age group 15-19 in 1960-62 and in 1968-69, while all the other age groups registered a decline in the mean number of live births. This decline became steeper after age 25, the highest percentage declined being found in the age group 35-39 followed by the age group 30-34.

TABLE 2

Percentage change in the mean number of live births at each quinquennial age group of a woman during the period 1960-62 to 1968-69 in Baroda city

Age group (years)	Mean number of live births		Percent change
	1960-62	1968-69	
15-19	1.22	1.22	Zero
20-24	2.27	2.15	— 5.3
25-29	3.89	3.44	—11.6
30-34	5.51	4.74	—14.0
35-39	7.59	6.13	—19 2
40-44	8.10	7.14	—11.8
45 and over	8.73	7.72	—11 6

The percentage decline in the mean number of live births in all the age groups from 20 onwards was found to be statistically significant. This thus clearly illustrates that women in the reproductive age group in general, and above the age of 20 in particular, had fewer children, in the years following the intensified programme.

(ii) *Mean age at each parity*

Table 3 shows that the mean age of the women at each parity was higher during 1968-69 than before. Though the increase was practically very small it was statistically significant. In other words, the reproductive cohort of women observed during 1968-69 showed a tendency to delay births to a higher age as compared to the reproductive cohort of women found before the intensified programme. This tendency was more so specially for women with parities of the order of three to five.

There is thus a trend among the women to delay pregnancy and to have smaller families in almost all the age groups during the later period of the intensive family planning programme. Also, higher order births (3+) showed a decline from a level of 51 per cent of

TABLE 3

Percentage change in the mean age of a woman at each parity during the period 1960-62 *to* 1968-69, *in Baroda city*

Parity	Mean age (years)		Percent change
	1960-62	1968-69	
1	21.10	21.36	1.23
2	23.29	23.57	1.20
3	25.21	25.67	1.82
4	26.94	27.62	2.52
5	28.75	29.28	1.84
6 and over	32.17	32.56	1.21

total births in 1961-62 to level of 40 per cent in 1968-69.[1] This is thus another evidence in support of the argument that the couples are trying to limit the sizes of their families, after they have had at least three children, and more especially after the intensification of the family planning programme which has helped, to some extent, in making the people accept methods of family planning at a comparatively lower parity. Further, the sterilisation programme appears to have played a comparatively major role in bringing about a decline in the fertility level in Baroda city[2].

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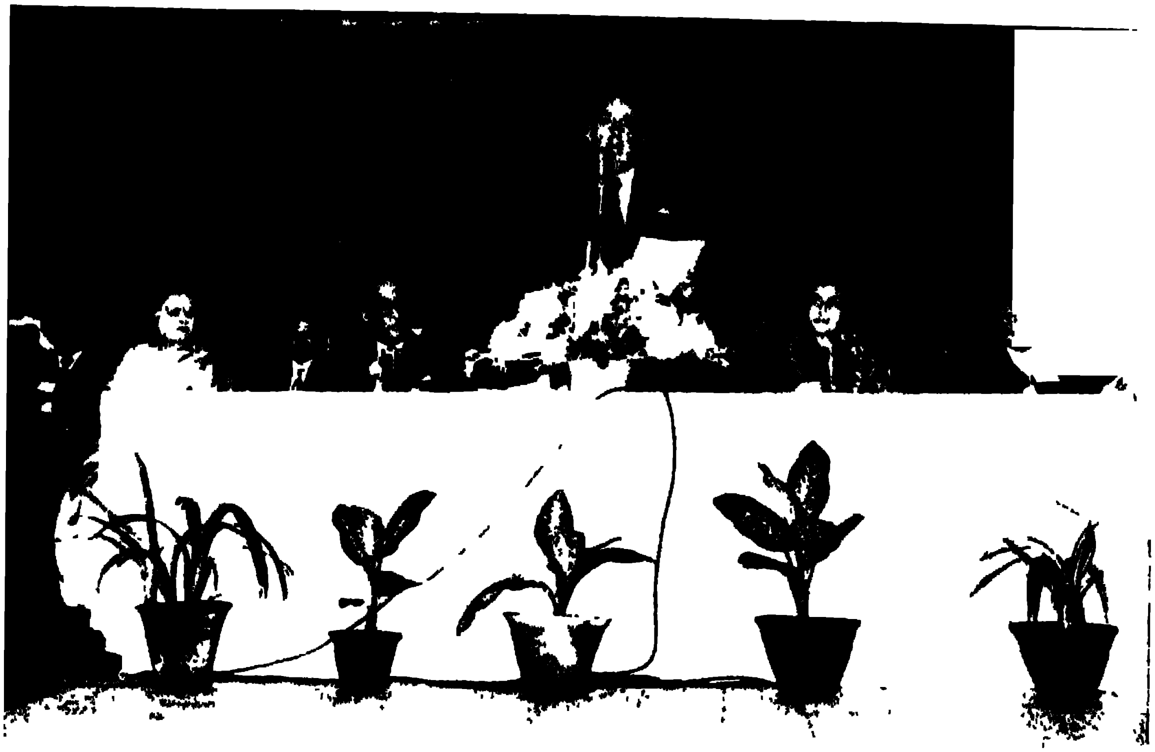

Dr Fernando Tamayo President IPPF, delivering the presidential address at the inauguration of the Conference

Seated from left to right Shri Ramesh U Pai Smt Avabai B Wadia Dr R P Soonawala Shri Ali Yavar Jung Governor of Maharashtra, who inaugurated the Conference Smt Ali Yavar Jung Mr Basu Shashi and Smt Vaidehi Chari

A view of the gathering at the inaugural function.

Dr D N Gupta presenting a paper at the Third Plenary Session
Seated from left to right Mr Madanmohan Mangaldas, Dr Kokila Baidhya
and Dr E. V Sebastian

Mr Basu Shashi, Chairman, IOR, reading the Recommendation drafted by the
Conference, at its Closing Session.

NEWS & NOTES

INDIAN OCEAN REGION CONFERENCE OF THE IPPF

Over 300 delegates from eleven countries including representatives of international agencies and national family planning organisations as well as eminent demographers, economists, gynaecologists, sociologists, scientists and others associated with or interested in population activities met at the Indian Ocean Region Conference of the International Planned Parenthood Federation, on the theme : 'Population, Development and the Environment', in Bombay from 9-15 December 1972.

The week-long Conference, a precursor to the celebrations by the IPPF of its twenty-first anniversary year during 1973 was inaugurated by Shri Ali Yavar Jung, Governor of Maharashtra, at an impressive inaugural function on the 9th evening, under the presidentship of Dr. Fernando Tamayo, President, IPPF. Dr. Georg Borgstrom, the distinguished authority on food science, population and environment, delivered the keynote addresses on the theme of the Conference.

The Conference was the first major family planning conference which linked aspects of the environment with questions of population and development. Experts read papers at its six plenary sessions on a wide range of topics including the development and demographic impact of family planning programmes in the Indian Ocean Region, the promotion of social and economic policies with implications on fertility trends, world action for population programmes and world population year, the role of international agencies, viz. ECAFE, FAO, ILO, UNESCO, UNICEF, WHO and World Bank in family planning and population programmes, the organisation and implementation of programmes, training and development of personnel in family planning education and services, the scope of family planning programmes in the organised sector, methods for mass adoption and use, liberalisation of abortion, better contraceptive technology and challenges facing the younger generation.

Nine discussion groups were arranged to ensure delegate participation where the delegates discussed topics like problems and possible solutions of communication and motivation, scope of family planning programmes in organised labour, industrial plants, public sector workers, etc., developmental planning and demographic factors, methods of contraception, liberalisation of adoption, teaching population education to school and out of school youth, and technological development and environmental imperatives.

At the closing session, Mr. Basu Shashi, Chairman, IOR, who also chaired the session, read a recommendation drafted by the conference to be sent to the IPPF, for world wide circulation, to stimulate action to protect the environment among the international community.

FAMILY PLANNING IN THE FIRST FIVE YEARS OF MARRIAGE

A report* of a 5-year follow-up survey of 350 couples married in Hull in 1965-66 and first interviewed shortly after marriage, and subsequently five years later, revealed a significant downward revision in intended family size from an earlier average of 2.61 to 2.23 children, there being a decrease in the number of couples wanting three and four children, the elimination of those wanting more than four children, and an increase in intended families of one and two children.

The contraction in intended family size was accompanied by the virtual disappearance of a number of correlates of differential fertility intentions which emerged from the series of interviews. Occupational differences had narrowed, the group which had reduced its family building intentions least was the manual worker component of the Registrar-General's Class III. The positive correlation between length of education of the husband and intended family size noticed at the first interview had almost disappeared during the 5-year period. Religion remained a significant determinant of intended family size, but its effect had diminished. Thus, whereas at the earlier interviews, Catholics wanted families 30 per cent larger than those wanted by non-Catholics, at the end of the second interview the excess amounted to 8 per cent.

The 312 couples who could be contacted at the second interview, had originally wanted families which would have resulted in 813 children; the downward revision occurring in the first five years of marriage gave a total of only 697 children. In all, 106 couples had revised their family intentions downwards and 31 had revised them upwards. More than half (55) of the 106 couples had done so for economic reasons, the second and third major categories included health reasons (20) and "hard work involved" (11). The biggest single reason for upward revaluation of intended family size was intentional over-achievement (14 of the 31 couples). In most cases this was the result of contraceptive failure or misuse.

In the first five years of marriage, the 312 couples had produced 471 live-born children (pregnancy wastage accounted for 14 per cent of all conceptions in the sample),—233 boys and 238 girls, representing an average family size, at this stage in marriage, of 1.51 children compared with a projected average, based on spacing intentions expressed at the first interview, of 1.76 children. Thus only 57 per cent of the total expected births had occurred by mid-1970 compared with 70 per cent predicted by the couples at first interview.

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* Dr John Peel in *J Biosoc Sci.*, (1972) 4, 333

At the time of the second interview, 129 couples had two children and 105 had only one. No couple had more than four children and only three had this number, although one wife had already had seven pregnancies. Forty-three couples were still childless—four of these had not wanted any children and two of these had since the first interview, changed their minds.

As many as 70 and 66 per cent of the first and second of the 577 pregnancies occurring during the survey period respectively (and this figure includes those who were pregnant at the second interview) were planned. Subsequent pregnancies had a higher proportion unplanned, amounting in the case of the fifth and subsequent pregnancies to 56 per cent, and risk-taking rather than contraceptive failure accounted for the majority of unwanted pregnancies. The risk-takers either used no method of contraception at all or periodically lapsed from contraceptive usage.

Two hundred and ninety (93%) couples had used some form of contraception during marriage—52.8 and 75.4 per cent of the couples had used contraception before the first and second pregnancies respectively. Of the 22 couples who had never used contraceptives, only six were determined non-users and formed the residue of those 25 couples who had earlier said they could never use any form of contraception.

The results also showed a virtual disappearance of methods like douching, jellies, creams, foam tablets, prolonged lactation and abstinence, which accounted for 25 per cent of the usage attributed to couples married in the 1950's. In terms of the months of use of each method during the 5-year period, three major techniques—the condom, withdrawal and pill, seemed to have replaced the "other" methods, these changes in contraceptive practice were considerable and in every case, the couples were able to rationalise about the reasons for moving from one method to another, Thus, the condom had been used at one time or another by 183 (59%) of the survey couples, the pill by 149 (48%) and withdrawal by 218 (41%) couples. Based on the survey data, an approximation to a social profile of the users of each of these major methods has been outlined.

The survey, carried out during a period marked by a growing concern with population problems and important new additions to the available range of contraceptive methods, thus showed that "no one in the study was indifferent to the existence of contraception and that not only attitudes but also actual behaviour can be viewed as rational in the area of family planning".

In conclusion, the author calls for detailed investigations in such significant groups of couples who knowingly take risks as well as for further research into why couples choose amongst the three major methods of birth control.

CURRENT DEMOGRAPHIC SITUATION

A review of data on births and deaths during recent years as well as in the earlier decades reveals that while the birth rates have generally remained at a consistently higher level, death rates have shown a rapid decline, thereby resulting in a rapid increase in India's population This, according to the United Nations is the second phase of demographic transition which is also being experienced in many of the developing countries.

TABLE 1

Birth and death rates in India, 1901-71

Period	Rate per 1,000 population Birth rate	Death rate	Natural increase
1901-11	49.2*	42.6*	6.6
1911-21	48.1*	47.2*	0.9
1921-31	46.4*	36.3*	10.1
1931-41	45.2*	31.2*	14.0
1941-51	39.9**	27.4**	12.5
1951-61	41.7**	22.8**	18.9
1961-71†			
	Sample registration overall		
1969	37.6	17.6	20.0
1970	37.0	15.9	21.1
1971	37.2	15.1	22.1
Rural			
1968	39.0	16.8	22.2
1969	38.8	19.1	19.7
1970	38.8	17.3	21.5
1971	39.0	16.5	22.5
Urban			
1969	32.6	11.4	21.2
1970	29.7	10.2	19.5
1971	30.0	9.6	20.4

* Estimated by Kingley Davis.

** Census Actuary's estimates

† To be worked out on the basis of Census-age distribution when available

This constantly higher birth rate, especially in the rural areas, and declining mortality have another far-reaching implication inasmuch as the number of people entering the reproductive phase is likely to be on the increase.

Among the individual states, Assam, Bihar, Gujarat, Haryana, Madhya Pradesh, Rajasthan and Uttar Pradesh have comparatively higher birth rates than the all-India average—these States, except for Gujarat are not so economically advanced. In fact, Uttar Pradesh, Gujarat, Madhya Pradesh and Rajasthan are at an extreme end of both higher birth and death rates. On the other hand, Kerala and Punjab have moderate birth rates and low death rates. In general, the southern States of Andhra Pradesh, Kerala, Mysore and Tamil Nadu, as well as Maharashtra, have lower fertility in terms of general fertility, total fertility and crude birth rates as compared to the other States.

Considering the rural population alone (in view of the late invitation of Sample Registration in urban areas), it was observed that fertility was highest in women between 25-29 years of age. About 80 per cent of the live births occurred to mothers below 35 years and over 50 per cent in the younger age group of 20-29, which is the most fertile period of childbearing. Unlike other developed countries where births are concentrated in the younger age groups (20-29 years), the fertility of Indian women is spread over the entire reproductive span. It has been estimated that an average Indian girl is married at the age of 16, has her first child at 19 or 20 and continues to bear children every 2-3 years. By the time she attains the age of 35, she has mothered 5-6 children, and may bear one more child in the remaining ten years of her fertile period. An average Indian woman thus has between six and seven children during her entire reproductive life.

Among the States, Assam, Rajasthan and Uttar Pradesh are the most fertile as revealed by certain indices of human fertility. On the other hand, Kerala, Maharashtra, Mysore, Punjab and Tamil Nadu are comparatively less fertile. It becomes obvious then, that to achieve a general reproduction in fertility within a reasonable period of time, concentrated family planning efforts are required in States like Assam, Gujarat, Madhya Pradesh, Rajasthan and Uttar Pradesh.

A more precise and meaningful picture of the fertility of Indian women is available from age-specific fertility rates, age-specific marital fertility rates and certain other indicators recently worked out on the basis of Sample Registration data. (In view of the late initiation of Sample Registration, only the rural population has been considered, which should be sufficient to give an insight into the magnitude of the problem in general.)

TABLE 2

Age-wise distribution of women by age-specific fertility rates, marital fertility rates, percentage of live-births and average number of children born: India, SRS Rural

Age-group (Years)	Age-specific fertility rate		Age-specific marital fertility rate		Percentage of live births to total births		Average number of children born to current mothers
	1968	1969	1968	1969	1968	1969	1969
15-19	109.4	97.9	156.1	139.7	11.2	10.5	1.3
20-24	251.4	261.9	271.6	282.9	24.2	26.2	2.1
25-29	272.6	266.9	288.7	282.6	25.2	24.8	3.5
30-34	224.3	226 0	244.7	246.6	19.7	20.1	4.8
35-39	172.3	158 3	196.9	180.8	12.4	11.5	5.8
40-44	81 6	77.1	104.0	98.3	5.3	5.1	6.4
45-49	39.7	35.5	55.8	49.9	2.0	1.8	—

Source : "Measures of fertility and mortality in India," Office of Registrar-General of India.

Though much evidence is not readily available at the all-India level to show a reduction or otherwise in the fertility of Indian women over the last several decades, there does not seem to be much reduction in their reproduction performance as revealed by an almost unchanging age distribution, absence of large groups of persons with reduced fertility and the failure of the average age at marriage to reach a level which may substantially reduce the fertility of a woman. On the contrary, during the last few decades, the demographic situation in general, seems to have developed in favour of a higher birth rate even under conditions of constancy of fertility, inasmuch as the general mortality has fallen, the incidence of abortion, maternal mortality and widowhood has also declined.

From "Centre Calling", October 1972.

THE FAMILY PLANNING ASSOCIATION OF INDIA

(Registered Under the Societies' Registration Act, 1860)

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1. To disseminate knowledge and education about, and to promote the adoption of, the practice of family planning for the advancement of basic human rights, family and community welfare, the achievement of a balance between the population and its resources and productivity and the attainment of a higher standard and quality of life.
2. To assist wherever possible in the national programme of family planning by undertaking to carry out various activities of a complementary, supplementary or innovative nature.
3. To study and formulate policies and programmes regarding the provision of measures for family planning, population control and allied subjects, and place its considered views and advice before Government and other agencies whenever appropriate.
4. To undertake or promote studies and activities in regard to services, training, education and research programmes covering the demographic, sociological, economic, medical and other relevant aspects of human fertility and its regulation, including methods of contraception, sterility, and sub-fertility, sex and family life education, marriage counselling, population education and human ecology.
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POPULATION AND ENVIRONMENT*

SMT. AVABAI B. WADIA
(President, Family Planning Association of India)

I feel greatly honoured at being invited to participate in this Lecture Series arranged by the International Institute for Environmental Affairs and the Population Institute, especially at this time, when the holding of a UN Conference on Human Environment is a highly significant event and one that has come not a day too soon. All those who are concerned with the problems of mankind have now reached a new awareness and sensitivity of his predicament and at the same time, of his great potentialities.

To view man as one entity in the total life processes of this planet and as one who is not a conqueror of, but a co-operator with, Nature, is an outlook which seems new but at the same time is a revival of the ancient wisdom. But while the ancients felt this intuitively, today we have many new means and tools by which to understand in depth the life systems of our small but beautiful planet Earth.

The new understanding that is beginning to spread, that it is essential for the human race to achieve an ecological balance if it is to continue to advance, is not something for starry-eyed idealists to dream about or for prophets of doom to shout about but for hard-headed economists, scientists, and politicians in particular, who hold the reins of power, to pay serious heed to, in their efforts to plan and implement social and economic policies for the benefit of their nations or regions.

In the last 200 years, wielding his scientific and technological weapons, man has vigorously exploited natural resources and reached new heights of power The great riches that have been created have certainly helped nations to lift themselves far above the brutish level of living. But at the same time, striving after economic growth beyond a certain point has brought in its train, a dark side where greed, competition and war have prevailed. For firstly, economic growth has been one-sided and two-thirds of humanity has been left out. Secondly, that growth has been achieved at a cost paid in different ways by all the peoples of the world and not only by those who have benefited the most, for many of the raw materials and non-renewable

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Introductory statement, presented as part of the Distinguished Lecture Series held concurrently with the United Nations Conference on the Human Environment, Stockholm, June 1972

resources on which it is based have come to a considerable extent from the so-called undeveloped world. Thirdly, even where this is not so, the avid consumption of resources has led to extensive problems of pollution and damage to the environment. And fourthly, the phenomenal growth of population within the last 200 years, first in the western world and now in the developing countries, has compounded every other problem and increased its menace.

Can we tackle any one of these problems without paying due attention to the others ? They are inextricably intermeshed, and need to be dealt with together and on a broad front. Population, development and the environment are the three major aspects of man's adjustment to the biosphere and the fulfilment of his own being.

A wealth of material has been published lately dealing with different aspects of these problems. The conclusions differ in emphasis, some highlighting technological ability to overcome all these problems; some stressing that exponential growth in both population and GNP must be halted; and some feeling that pollution can be fought with elaborate and expensive anti-pollution methods, and neither economic growth nor population increase need to be curbed. However, the consensus is that renewable and nonrenewable resources are being used up at an extraordinary rate and the fall-out of such use is damaging life and living for man and other living species.

To deal first with the population problem, the amazing fact is that it is only since about the last two decades that statesmen, politicians, and leaders of public opinion have, slowly and quite reluctantly, recognised population growth as posing a grave problem for the world and for individual countries. The first warnings were sounded long before that, by far-sighted individuals and voluntary bodies, but public attention began to focus clearly on the problem only after seeing the results of the Censuses which were carried out in the 1950s and 1960s or thereabouts, in various countries. The United Nations and its agencies, as representing a world consensus have come into the picture fully only since the sixties, with the exception of the Population Commission which was established a number of years ago.

Considerable time has been lost, therefore, in recognising the importance and dimensions of the problem. And time is of the essence.

The main facts about population growth are now well known. It took from the beginning of time until A.D. 1650 for population to reach 500 million. This is where the Great Divide occurred, with the ushering in of the scientific and industrial age. The great discoveries in medicine and prevention of disease and the extraordinary advances in agricultural practices, in industrialization and rapid transport had the effect of reducing untimely deaths and improving living conditions, with the result that population began to increase more rapidly. Within the next two centuries population doubled again to become one billion. The second billion was added in the next 120 years and the third billion within 40 years. The present world population stands at 3.5 billion and at a growth rate of 2% per annum it will double in another 35 years to about seven billion people.

It is obvious that twice the number of people will mean, at the least, twice as much food, water, and other resources apart from facilities like education, health and employment, even to maintain present levels which, for two-thirds of the world's people, means living in grinding poverty and misery; and the problem of growing numbers will then be even more intensified. The theories and calculations about the potential capacity to feed and keep alive much larger populations are not helpful in dealing with the practical difficulties of providing even for existing populations. At present, in the low-income countries, there has been an average annual increase in the GNP of about 4.5% but when it comes to per capita income, it is just over 2% —the average rate of population growth of 2.5% has eaten away more than half the gains made during the decade. Those who pin their faith on advancing technologies of production leading to greater abundances cannot afford to ignore the significance of natural limits to linear growth. Nor has it been sufficiently appreciated that growth in world population and in economic wealth have been so ill-positioned that the two movements are developing away from each other, rather than converging so as to mitigate hardships.

Already, the division between the have and have-not countries in the world is widening rather than being bridged, in spite of vast developmental efforts, helped by foreign aid. The disheartening results of the recent UNCTAD III Conference in Santiago have clearly indicated that this is the way economic competition will go, in spite of considerable goodwill in some quarters to rectify such distortions. The so-called developing countries, many of them with highly advanced cultures and social cohesion, but poor in terms of present day economic standards, have to overcome unprecedented difficulties in the way of banishing poverty and providing a sufficiency of food and nutrition, clothing, shelter, health, education, work, recreation and security for their peoples.

The developing countries have at present the highest rates of increase in population. Part of their tragedy has been that while the techniques to lower death rates were exported to them with humanitarian zeal, the technologies to promote agriculture and industrialisation did not accompany them, often for political reasons; and on the part of the developing countries themselves, outmoded institutions, social stagnation and lack of political power did not provide fertile ground for rapid innovation. A lopsided situation has therefore arisen, where death rates are going down much faster than birth rates, leading to increasing growth rates and adding to the problems of lack of food and nutrition, of essential facilities, and of the means of livelihood, which are confronting large masses of people.

However, the developing countries are on the march. They are straining every nerve to raise their standards of living and development plans are being vigorously implemented, with remarkable success, in some instances.

In one respect, some of the developing countries in Asia have given a positive leadership to the world. For they have squarely and boldly faced up to the problems posed by rapid population growth which are hindering their efforts at achieving higher standards of living.

While Japan is the only Asian country which has already solved this problem, many of the developing countries are now pursuing policies which can eventually lead to a reduction in the rate of population growth. The promotion of large-scale family planning programmes has been the mainstay of such policies so far, but it is now being increasingly realised that these must be supported by political, social and economic measures with fertility-reducing implications. Thus, family planning programmes which are being promoted for family welfare in the first place, have been given a strong, added emphasis that this can best be attained through *voluntarily* adopting the small family norm.

The Government of India was the first in the world to state categorically that the slowing down of population growth was one of the keys to progress and therefore, included this in its Development Plans. In the course of years it has mounted a massive family planning programme throughout the country, with the support of voluntary effort, and among several other measures, has established about 30,000 service centres of various types. In addition, there is a wide-ranging programme of education and motivation to inform and persuade couples in the reproductive age groups (who number no less than 100 million), *voluntarily* to plan their families and adopt the small family norm—which was first described as of three children and now is often shown as of two children. The aim of the programme is to bring the birth rate down to 25 per thousand by about 1980.

Population stabilisation programmes must inevitably take time to show results especially as they depend, in large part, on the personal, individual decisions of countless millions of people. They also depend upon the excellence of contraceptive technologies, but unfortunately the methods available so far, are, on the whole, defective and uncertain.

Nevertheless, some headway has been made; an important part of the battle has been won in that there is now a very widespread popular appreciation of the need to regulate population. In several South East Asian countries, such as Ceylon, Singapore, Hong Kong, and S. Korea, there has been a decline in birth rates, but growth rates remain high. In India, where the scale of operations is immense, there has been a slight drop in the national birth rate, with better results in certain pockets. When it is recalled that the Indian programme is dealing with one-seventh of all humanity, it is clear that when results emerge, as they must, they will have a world impact.

In the case of many of the African and Latin American countries, family planning programmes are now gaining ground on the primary basis of family welfare and will no doubt have a healthy effect on their economic plans.

During the last few years, the population problem has been highlighted primarily in terms of high growth rates related to low levels of economic development, and the focus has been on the developing countries. It has been assumed for the most part that industrialised countries with rising GNPs, and population growth rates of one per cent or under, have very little cause for anxiety in regard to their own population growth.

The increasing awareness of the environmental crisis has exploded this assumption.

In the past, natural resources appeared to be almost uncountable and it was people who were too few ; man's fairly recent achievements have reversed this position. The augmentation of his industries, his technological discoveries, his numbers, his mobility, his amusements and in sum, his material standards of living has spiralled up to such a degree that a crisis of growth has appeared in sight, more especially as this progression has not been spread evenly around the globe.

The pursuit of ever-higher material standards of life, which is the dominant objective of economic growth, is now developing a backlash. Pollution, which may have dangerous effects on living organisms, and a depletion of natural resources, are only two of its manifestations. Other effects concern the social order and individual relationships and satisfactions. Increasingly devouring the earth's resources resting in many parts of the globe, in order to keep up the growth momentum, has serious economic implications. This is especially so for the future of the developing countries who will thereby have access to fewer resources. But it is the ecological implications which are now being recognised as posing dangerous trends for the human race itself.

Uncontrolled population growth is but one aspect of the ecological crisis and while the developing countries are tackling it as an integral part of their socio-economic advancement, the industrialised countries have to focus on it from the standpoint of preserving the environment. In fact, it has been pointed out that in proportion, population growth can be considered to be even more of a pressure and a liability in affluent countries, for, on a per capita basis, their consumption of resources can be as much as 25 times that of poor countries, so that even their lower population growth has important adverse effects. The USA for instance, with 6 per cent of the world's population, consumes about 40 per cent of the world's output of raw materials, not counting food.

Obviously, what is needed is to go to the fundamentals and evolve a new philosophy of life and to work for moderate levels of comfort spread over the greater part of the world, than to have the extremes of rich and poor which get accentuated as time goes on.

It may well be, therefore, that concern for the environment, if truly pursued, will prove to be a potent means of eliminating global poverty.

As the limits to population and industrial growth become visible, the ecological control mechanisms are getting under way. The Spaceship Earth, as it has been poetically called, has its own intricate systems, functioning according to their own in-built laws, and must be understood and respected if catastrophies, small or large, are to be avoided.

Evidence to support this view is piling up in many parts of the world through the pollution of air, water and land with damaging effects on living organisms including the human body, the destruction of non-renewable resources and the debasement of the human environment. What is worse, these ill-effects are no more localised, nor of short duration.

As Mrs. Indira Gandhi said recently: "Man's wild spirit has been creator and destroyer. Now with the possibility of destruction so starkly real, we must concentrate on the art of preservation".

Inescapably therefore, the environment, development and population must be regarded as three aspects of one whole and must be kept in harmonious balance.

Will this new attitude have the effect of retarding the progress towards development for two-thirds of the world?

The answer is that, on the contrary, it can, if properly applied, lend a new and enriching dimension to their efforts. It cannot and must not be used as a new tool to be manipulated for sectional gains on the part of the rich nations. On their part, the developing countries have based their plans mostly on the classic patterns of industrialisation, be they Western or Marxist style, but have not gone so far that they cannot re-mould them to avoid the negative aspects of the growth syndrome and to enhance respect for the environment.

At present, most of the environmental problems in the developing countries are rooted in poverty and the very process of improving standards of life can help to eliminate them. At the same time, their course of industrialisation must be so mapped out that some of the major ills now plagueing the affluent countries can be avoided or minimised. The imaginative use of intermediate technologies with a labour-intensive bias can assist in this. One point that emerges is that the aim should be for a more balanced and well distributed growth, with a new design for living which provides for reasonable needs and satisfaction, with a greater regard for the natural endowment of the earth and with a deeper awareness of the psychological and spiritual needs of man. This may not lead to impressive GNPs, but will help to bring about an elevation of life and the liberation of the human spirit where the individual will be counted as a precious resource, and not as a cog in the wheel of mechanistic civilisation.

Ultimately, it is the ethical values that will count, to make men's lives truly rich. We are possibly witnessing today the slow emergence of a new and fundamental ethic based on ecologic equilibrium and harmony, which will help mankind to rediscover his place and purpose in life, and renew the fount of inspired living within him. Such a renewal is being longed for by humans in all parts of the globe. Present day youth in particular, especially in the West, are essentially trying to overcome the deep psychological malaise that has afflicted the consumer society with its cult of giganticism and the power of wealth, and where a surfeit of food, security, amusement, and sensation has brought about a great weariness of the spirit, and purposelessness.

It is chiefly up to youth now, to work for the unfoldment and recognition of this new ethic and, in the words of poet Rabindranath Tagore, uttered 40 years ago to a young audience, "*to prove that love for the earth, and for the things of the earth, is possible without materialism, love without the vulgarity of avarice*".

IDEAL VERSUS ACTUAL : PATTERNS OF INTERPERSONAL COMMUNICATION IN FAMILY PLANNING IN AN INDIAN VILLAGE*

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Clinical services and communications form the two essential components of a well organized family planning programme. Through clinical services people obtain medical advice and contraceptive services in clinics and hospitals. The communications components provide information in order to inform, educate and motivate the audience to take action in a desired direction. Broadly speaking, clinical services components concentrate in the area of technical engineering while the communications components focus on the area of social engineering in a family planning programme. Administrators all over the world have become increasingly aware that a programme of planned change, such as a family planning programme, is not merely a problem of technical engineering but of social engineering as well. For example, experiences in family planning programmes in such countries as Ceylon, India, Kenya, Singapore and Thailand have convinced the family planners that a mere "clinical approach" without the supportive communications component is inadequate to bring down the birth rates. This was perhaps the main reason for the shift from the "clinical approach" to an "extension approach" in the Indian family planning programme in 1963. The "extension approach" emphasizes the communications component of the family planning programmes in the form of Communication Action Programmes.

It is important to realize, however, that before launching an action programme in family planning communications in any society, it is imperative to become aware of the existing patterns and channels of communication in that society. Identification and understanding of the already existing communication networks and patterns in a given cultural milieu will facilitate careful planning and implementation of the communications programme. This is particularly important when we consider the rural Indian set up, where high illiteracy levels, low standards of living and poor communication facilities militate against the extensive use of mass media. In India's rural sectors people largely depend upon word of mouth communication to gain information and form opinions. This word of mouth or person-to-person communication is influenced by a society's nexus of socio-cultural factors and forces. The family planning communicators should have a thorough knowledge of the target people; their cultural values, community organizations and interpersonal relations.

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* This article is a revised version of a chapter in the Ph D. Dissertation titled, "Family Planning Communication in Rural India," Syracuse University, New York, June 1970.

In any society people often have two sets of behaviour patterns—the *ideal* or the normative and the *real*. In family planning programmes, we should be aware of both what people would *like to do* and what they *actually do*, given socio-cultural environment. Programmes based upon data on "desired" or ideal behaviour, usually collected through hurried sociological surveys, often fail to achieve the anticipated goals. This is because these surveys do not devote enough time to explore the actual behaviour patterns. This article deals with the ideal or desired and actual interpersonal communication patterns on the subject of family planning in a north Indian village. We will focus on the inter-caste and inter-sex differences regarding interpersonal communication in order to reveal the *extent* of interpersonal communication and the *sources* of information and consultation regarding family planning.

The village

The village selected for this study was Mangalnagar*, one of the 33 villages in the Mehrauli Family Planning Programme project. Mangalnagar is a large sized village with a population of 1,810 people consisting of 995 males and 815 females It is a multicaste village and the population distribution according to caste, household and sex is given in Table 1.

Sampling procedure

A list of households having eligible couples was made from the census data. There were about 300 eligible couples living in the village at the time of our field work We decided to interview 60 males and 60 females (one fifth of the eligible couples) who were between the ages of 15 and 45 years, married once and living with the spouse in the same household. Since there was only one Brahmin household we did not include the eligible couples from this caste in our research. We decided to interview 30 men and 30 women from the Gujar caste

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* We have used a pseudonym to maintain anonymity of the village

TABLE 1

*Population distribution in Mangalnagar according to caste, household and sex**

Caste	Population	Per cent of total population	Number of households	Average No. of persons per household	Males	Females	Sex ratio
Gujar	1,314	72.6	166	7.9	725	589	123
Chamar	350	19 3	51	6.7	199	151	131
Brahmin	49	2.7	1	49.0	25	24	104
Bhangi	44	2.4	7	6.3	22	22	100
Darzi	38	2.0	4	9.5	16	22	73
Nai	11	0.6	2	5.5	5	6	83
Others**	4	0.2	3	1.3	3	1	300
Total	1,810	99.8	234	7.7	995	815	122

* Population as of March 1967

** Others include one lady teacher and her son (of Vij caste) and two Jat males.

(one-seventh of the eligible respondents) and 20 men and 20 women from the Chamar caste (one-third of the eligible respondents). Since there were only seven Bhangi households, we decided to include the eligible couples from the Darzi (tailor) caste with those from the Bhangi caste. In all there were 14 eligible couples from these two castes and we wanted to interview 10 men and 10 women. For convenience we have grouped these respondents from the Darzi and the Bhangi caste under Bhangi. We selected the respondents by using a random-digit table. We used male and female interviewers to collect data on the respective sexes.

The male investigators were able to complete all the 60 male interviews assigned to them earlier than expected. Hence they were told to interview some more male respondents from the sampled list. In all 72 male respondents were interviewed. On the other hand, the female investigators were able to complete only 45 of the 60 female respondents. We present below an analysis of data from 65 males and 39 females that were complete and internally consistent.

The general nature of communication on family planning

In order to assess the general nature of communication regarding family planning among the villagers, the respondents were asked the question, "We are trying to learn how much discussion takes place among people in this village regarding family planning. Do you believe that family planning is something that *people :*

1. Are too shy to talk about
2. Talk freely with friends
3. Talk freely with relatives?"

Responses to this question are given in Table 2, separately for each caste and sex. In this table we note that for the village as a whole, men are more shy than women to talk freely about family planning. Among men, 54 per cent said that people talk freely with their friends whereas only 9 per cent mentioned that free discussion takes place with relatives. On the other hand, the respective percentages for women are 40 per cent (with friends) and 33 per cent (with relatives).

TABLE 2

General nature of discussion regarding family planning

General nature of discussion	Males (N=65)			Females (N=39)			Total	
	Gujar	Chamar (Per cent)	Bhangi	Gujar	Chamar (Per cent)	Bhangi	Males (Per cent)	Females
People too shy to talk	37.1	30.4	25.0	27.7	23.0	22.2	32.8	23.8
People talk freely with their friends	48 5	56.5	66.6	38.8	38.4	44.4	54.2	40.4
People talk freely with their relatives	8.5	8.6	8.3	27.7	38.4	33.3	8.5	33.3
No answer/ don't know	5 7	4 3	0.0	5.5	0.0	0.0	4.2	2.3
Total	99.8	99.9	99.9	99.7	99.8	99.9	99.7	99.8

These responses perhaps represent the general nature of communication regarding family planning among the villagers in Mangalnagar. Although the responses given are reportedly for the *people* of the village as perceived by the sampled respondents, their answers could also be seen as a projection of their *own* ideal pattern of communication on matters pertaining to family planning. In this context then, we find that women, as compared to men, are reportedly more free to talk about family planning and are less shy to talk about it with their relatives. Men, on the other hand, prefer to talk with their friends than with their relatives. Generally speaking, for both sexes considerable discussion on family planning takes places *outside* the family and the conjugal units. We also note that the reported communication behaviour becomes more free as we move from higher to lower castes (in terms of social status).

Ideal sources of consultation

From the general nature of communication, we moved to topics of greater specificity. We inquired from the respondents about the ideal or the desired sources of consultation regarding family planning by asking the question, "If you wish to consult or talk with someone regarding family planning, who would be the most desirable person?" Their responses, first choice only, are given in Table 3.

It is interesting to note in Table 3 that men of the Gujar and the Chamar castes preferred to talk with their friends about family planning. Their second desired source was their wives. For men of the Bhangi caste this situation was reversed On the other hand, the husband formed the most desired source for all women and the Central Family Planning Institute's agents (CFPI agents) ranked second. Friends as a consultation source occupied only the fourth position.

TABLE 3

Ideal sources of consultation for family planning
(First choice only)

Ideal consultation sources	Males (N = 65)			Females (N = 39)			Total	
	Gujar	Chamar (Per cent)	Bhangi	Gujar	Chamar (Per cent)	Bhangi	Males (Per cent)	Females
Spouse	26.4	33.1	50.0	38.8	49.9	55.5	32.3	46.1
Mother	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mother-in-law	0.0	0.0	0.0	11.1	8.3	0.0	0.0	7.6
Father	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Doctor/Nurse	5.8	9.5	0.0	0.0	0.0	0.0	6.2	0.0
Relatives*	8.8	9.5	10.0	16.6	8.3	11.1	9.2	12.8
Friends	41.1	33.1	30.0	16.6	0.0	0.0	36.9	7.6
Leader	2.9	0.0	0.0	0.0	0.0	0.0	1.5	0.0
CFPI agents	5.8	4.7	0.0	16.6	16.6	22.2	4.6	17.9
Dāi	0.0	0.0	0.0	0.0	16.6	11.1	0.0	7.6
Others	8.8	9.5	10.0	0.0	0.0	0.0	9.2	0.0
Total	99.6	99.3	100.0	99.7	99.7	99.9	99.9	99.6

* Include relatives other than spouse, mother, mother-in-law, father and father-in-law.

Ideally then, in Mangalnagar, men preferred to consult mostly with their friends. The second and the third desired sources of consultation were their wives and relatives (other than the wife, mother, mother-in-law, father and father-in-law). Women desired their husbands as their first consultation source, followed by the CFPI agents and relatives in that order. Once again we note that, in terms of percentages, relatives formed a more desired source of consultation for women than for men. Table 3 also reveals that ideally speaking, the spouse as a source of consultation for family planning increasingly becomes important as we move from the high to the low caste. Thus, communication regarding family planning ideally becomes more free between the husband and wife as we move down the social status of the individual based upon caste. While about nine per cent of male respondents mentioned "others" as an ideal source of consultation, this source was not mentioned by any of the female respondents. This indicates, given the social restrictions on free mobility for women in an Indian village setting, that outsiders who visit the village seldom act as a source of consultation or information for family planning for women. The only exception to this would be the CFPI agents. Generally speaking, women avoid unnecessary contacts with outsiders or "strangers" and are secluded from such contacts due to the *purdah* (seclusion) system. The village midwife (*dāi*) as an ideal source of consultation was cited by about eight per cent of females whereas no male wished to consult with this source. We also find that the midwife, who belongs to the Bhangi (sweeper and untouchable) caste, was never mentioned as a desired consultation source by the high caste Gujar females. This indicates that the caste system poses an obstacle to free communication between members of different castes.

Actual sources of consultation

Moving from the ideal situation to the real one, in order to determine the *actual* sources of consultation for family planning and birth control, we asked the question: "Have *you* talked with anyone about family planning within the last three months?* If yes, what kind of group or person was it?" Only 51 men and 29 women answered this question. Their responses are tabulated in Table 4. In Table 5 we have compared the ideal or the desired with the actual consultation sources mentioned by the respondents.

In Tables 4 and 5 we note that whereas about 32 per cent of men wished to consult with their wives regarding family planning, only

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* The question regarding the ideal sources of consultation were answered by 65 males and 39 females Almost all of them mentioned that they had talked with someone about family planning However, for analysis and interpretation of data pertaining to actual sources of consultation on family planning, we included responses from 51 males and 29 females who said that they had talked or consulted with someone during the three months before our survey This approach was followed to avoid loss of memory due to time lag

TABLE 4

Actual sources of consultation for family planning (First choice only)

Actual consultation sources	Males (N = 51)			Females (N = 29)			Total	
	Gujar (Per cent)	Chamar	Bhangi	Gujar (Per cent)	Chamar	Bhangi	Males (Per cent)	Females
Spouse	11.5	18.7	22.2	8.3	11.1	25.0	15.6	13.7
Mother	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mother-in-law	0.0	0.0	0.0	16.6	0.0	0.0	0.0	6.8
Father	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Doctor/Nurse	3.8	6.2	11.1	0.0	11.1	12.5	5.8	6.8
Relatives*	7.6	12.5	0.0	25.0	11.1	12.5	7.8	17.2
Friends	50.0	50.0	44.4	33.3	22.2	12.5	49.1	24.1
Leader	7 6	0.0	0 0	0.0	0.0	0.0	3.9	0.0
CFPI agents	11.5	6.2	11.1	16.6	22.2	25.0	9.8	20.6
Dāi	0.0	0.0	0.0	0.0	22.2	12.5	0.0	10.3
Others	7.6	6.2	11.1	0.0	0.0	0.0	7.8	0.0
Total	99.6	99.8	99.9	99.8	99.9	100.0	99.8	99.5

* Include relatives other than spouse, mother, mother-in-law, father and father-in-law.

TABLE 5

A comparison between ideal (desired) and actual sources of consultation for family planning (first choice only)

Sources of consultation	Desired or Ideai Sources		Actual Sources	
	Males (N = 65) (Per cent)	Females (N = 39)	Males (N = 51) (Per cent)	Females (N = 29)
Spouse	32 3	46.1	15.6	13.7
Mother	0.0	0.0	0.0	0.0
Mother-in-law	0.0	7.6	0.0	6.8
Father	0.0	0.0	0.0	0.0
Doctor/Nurse	6.2	0.0	5.8	6.8
Relatives*	9.2	12.8	7.8	17.2
Friends	36.9	7.6	49.1	24.1
Leaders	1.5	0.0	3.9	0.0
CFPI agents	4 6	17.9	9.8	20.6
Dāi	0.0	7.6	0.0	10.3
Others	9.2	0.0	7.8	0.0
Total	99.9	99.6	99.8	99.5

* Include relatives other than spouse, mother, mother-in-law, father and father-in-law.

about 16 per cent actually did. Similarly, only 14 per cent of females mentioned that they had actually consulted with their husbands, although more than 45 per cent expressed a desire to consult with them. It is striking to note the relative infrequency with which spouses actually consult with each other on matters pertaining to family planning. It is useful to mention here that we found during our research that the communication between husband and wife, especially if the married couple is young, is very restricted. This restricted communication is particularly noticeable on matters regarding the family, number of children a couple would like to have and family planning. As the couples get older and as they get more children, there is increasing communication between husband and wife.

For both men and women friends formed the most important consultation source, again supporting the view that considerable discussion on family planning takes place outside the conjugal and family unit. For female respondents, the CFPI agents and relatives occupied the second and the third ranks respectively as actual sources of consultation and the husband occupied only the fourth position. For men the wife ranked second among actual sources of consultation for family planning followed by the CFPI agents. Relatives as a source of consultation ranked only fourth. While about 17 per cent of the female respondents mentioned relatives as actual sources of consultation, only eight per cent of the male respondents gave a similar answer. This is perhaps due to restricted mobility and "more rigidly circumscribed social worlds" for women in a rural cultural milieu. Mobility restrictions naturally will force the women to depend upon close relatives and friends for information and consultation. This view gains support from the fact that no woman mentioned "others" as a consultation source; "others" include those persons who were neither friends nor relatives but were visitors to the village. We also find that men, as opposed to women, do not discuss freely topics pertaining to sex and family planning with their relatives.

The midwife, *dāi*, was never consulted by high caste Gujar women. However, the midwife's role as a source of consultation on family planning figured prominently for the female respondents of the other two castes. Since the village midwife belongs to the Bhangi caste, the lowest caste in terms of traditional social status in this village, due to rules governing purity and pollution as a result of commensality, communication between the mid-wife and the high caste Gujar females is limited. This was not the case with women of other castes, whose traditional social status is not high. In view of this finding, it is important to emphasise here that the family planners should be aware of caste restrictions in communication patterns when selecting local "agents" of change. Since the midwife in a village deals with the childbearing activities, it is assumed that she is the most effective change agent for family planning programmes in India's villages. Generally speaking the midwife in an Indian village comes from a low caste and this may pose a barrier to free communication and interaction with members of higher castes.

We also note that the roles of village leaders and medical personnel such as doctors and nurses were limited as actual sources of consultation on family planning. The village leaders were not mentioned at all by the female respondents and less than four per cent of males cited this source. Once again our findings reveal that it may be a misjudgement on the part of the planners to overemphasize the role and effectiveness of village leaders as agents for family planning information and communication in India's villages. We observed that in rural India family planning is not a "public subject" and people, particularly men, prefer to discuss this topic with persons who belong to similar socio-economic status, are of the same age and share similar interests. In short, communication is horizontal rather than vertical. It appears that lack of communication between the village leaders and the common villagers on matters of daily interest in general and on sexual and family planning matters in particular, is due to cultural norms regarding deference for old age, respect, modesty, social stratification, purity-pollution and a general taboo on free discussion of topics pertaining to sex. In a tradition dominated rural India, the village leaders are often members of a high socio-economic caste, old in age, and are almost always males. Our conviction, supported by our research, is that the efforts to isolate opinion leaders through sociometric choice techniques to help in programmes of fertility control in rural India may be misplaced.

From informal interviews we came to know that many of our respondents did not even know that the clinics and health centres provided free family planning advice and services. The villagers' contacts with the "doctors" and "nurses" were limited to those who visited the village in mobile clinics and during family planning "campaigns".

The workers or the agents from the Central Family Planning Institute, as actual sources of consultation, were less important for males than for females. This clearly reflects a female bias in the family planning programme in this village. Again we note that the actual pattern of husband-wife communication on family planning increases as we move from high to low castes.

Conclusion

Regarding family planning communication, we found that more men than women reported that the villagers in Mangalnagar were too shy to talk about family planning. As compared to females, a higher percentage of males mentioned that the villagers talk more freely with their friends than with their relatives. Females, on the other hand, said that the villagers talk freely about family planning with both friends and relatives. These responses indicate the differential nature of family planning communication among male and female respondents in the village.

For consultation on family planning, ideally the male respondents preferred their friends as their first choice and their wives as the second. The female respondents preferred their husbands as the first choice and the agents of Central Family Planning Institute as the second. Looking at the actual sources of consultation, friends formed the most important consultation source for both male and female respondents. More females than males also reported that they had actually consulted with their relatives on matters pertaining to family planning. Contrary to the commonly held belief, the village leaders' role as a source of consultation, ideal or actual, was insignificant for males and totally ineffective for females. Likewise, none of the male respondents mentioned the village midwife, *dāi*, as a consultation source. The midwife was also unimportant as a consultation source for high caste Gujar women. The relatively ineffective roles of the village leaders and the village midwife as sources of consultation for family planning indicates that distinctions due to caste status, age, sex, socio-economic levels, and social rules governing these distinctions act as communication barriers in a rural Indian milieu.

PATTERNS OF BIRTHS IN LOW, MEDIUM AND HIGH FERTILITY COUNTRIES

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Introduction

The birth rate or for that matter any fertility measures for the world as a whole portray only the averages of behaviour for very heterogeneous populations and it is possible to identify three distinct groups of countries exhibiting basically different reproductive behaviour. This paper attempts an identification of three groups of homogeneous countries, with respect to their levels of fertility as measured in terms of birth rate, and a study and comparison of the patterns of distribution of births by order of birth. The objectives of the paper are two-fold: firstly, to analyse the live birth order distribution for various countries in the world in order to study various patterns of fertility behaviour prevailing in the low, medium and high fertility countries and secondly, to examine the distribution of births by the age of the mother for these three groups of countries.

The crude birth rate has been used to measure the level of fertility of a country. Since the birth rates differ markedly from country to country, these countries may be grouped under three less heterogeneous categories of: (a) high fertility with a crude birth rate of 35 and above per 1,000 population, (b) medium fertility with a birth rate between 20 and 35 per 1,000 population, and (c) low fertility with a birth rate below 20 per 1,000 population.

Data availability

The study was restricted to selected countries in the world due to the non-availability of data for many countries in Asia, Africa and Latin America. Very few countries in Asia and Africa collect information on births by age of mother and live birth order. Further, the available data on birth statistics suffer from under-registration of births. Most of the countries in Europe, Oceania and Northern America which are known for having quite complete birth registration systems, except Luxembourg in Northern Europe, Bulgaria and Malta and Gozo in Southern Europe, have been included because of the ready availability of data for these countries. In Asia, Cyprus, India, Israel, Korea, Malaysia, Philippines, Pakistan, Ryukyu Islands, Singapore and Thailand have been included. Guatemala, Mexico, Panama, El Salvador, Puerto Rico, Barbados and Chile from the Latin American region and Algeria from Africa have also been covered. The relevant data for the year 1967 have been drawn from the *Demographic Year Book*, 1969[1] except for India and Korea where the data have been taken from the vital statistics data of India[2] and Korea[3] for the year 1966. The completeness of birth registration for India, Korea, Pakistan, Philippines and Thailand is only in the range of 60 to 70 per cent.

Level of fertility

Countries in Europe, Northern America, Oceania and the USSR have very low levels of fertility, with birth rates of less than 20 per thousand population. Albania is distinct among European countries for its very high birth rate. Countries having a birth rate of 35 and above per 1,000 population are, with a few exceptions, mostly found in Asia, Africa and South America. However, in these regions, a few countries such as Israel, Argentina and Japan have very low levels of fertility because they are industrialised to a considerable extent.

An analysis of the birth rates of all the countries in the world reveals that the average level of fertility among inhabitants of the more developed countries, combined, is generally about one-half or less than that in the less developed regions (Appendices I and III). Another point which is most striking is the marked degree of homogeneity obtained by considering the range of birth rates among more developed countries in respect to levels of fertility and patterns of births (Appendix I). On the other hand, developing nations, mostly in Africa, Asia and Latin America, exhibit a widening range in the levels of fertility because of the divergence of conditions that influence fertility. This phenomenon, i.e., an heterogeneous behaviour in the pattern of reproduction, is not unexpected because increasing heterogeneity of behaviour is generally a characteristic of the early phases of social and economic development.[4]

There have been a few countries in the developing region, notably Taiwan, Hong Kong and recently, Singapore (not included in the analysis) wherein the incipient decline in fertility appears to be underway and these countries have been transiting from a high to a low fertility level.[5]

Analysis of births by order

The percentages of birth order distribution by various orders for the countries under consideration have been given in Appendices I, II and III. The mean of all these distributions for countries with low, medium and high fertility have been taken to represent respectively, the low, medium and high fertility regions *per se*. The mean birth order distributions for these three regions have been tested to find whether the birth order distribution of each country deviates significantly from the mean distribution in the respective region. The Molmogorov-Smirnov test,[6] a well-known non-parametric or distribution-free test, based on the maximum difference between an empirical and a hypothetical cumulative distribution was used here by treating birth order as a continuous variable whereby the first birth order varies from 0.5 to 1.4, the second birth order varies from 1.5 to 2.4, and so forth. The test revealed that only two countries in the low fertility region, namely Japan and Bulgaria, showed a significant departure from the mean distribution at a five per cent level of significance. These countries have undergone drastic reductions in fertility levels over a short span of time and their birth order distributions are quite distinct as compared with those of many of the European countres. All the countries in the medium and high fertility regions did not deviate significantly from their mean distributions at the five per cent level of significance

TABLE 1

Percentage of births by order

	Order of birth						
Level of fertility	1	2	3	4	5	6+	Total
Low	39.16	30.53	14.89	7.09	3.60	4.74	100.00
Medium	29.63	22.73	15.69	10.25	6.71	14.99	100.00
High	21.00	17.06	14.78	12.82	10.24	24.10	100.00

Table 1 gives the proportion of births of different orders to total live births that occur annually in the low, medium and high fertility countries. Many points of interest emerge from the table. It is evident that a certain distinct pattern of birth order exists in relation to the level of fertility. The high fertility region has a high percentage of births of order four and above: more than 47 per cent of births among the total births were of order four and above, whereas these amounted to only 15 per cent in the low fertility region and 32 per cent in the medium fertility region.

Another noteworthy point is that the proportion of births of order six and above was more than the proportion of first order births in the high fertility region whereas in the low fertility region it was only one-tenth of the proportion of first order births. This observation becomes significant if we realise the fact that the problem in the high fertility countries is essentially the occurrence of a high percentage of higher order births. The mean birth order for the low fertility region was 2.53 whereas it was 3.15 and 3.82 for the medium and high fertility regions respectively. Therefore, the possibility of achieving a transition from the high to a low fertility level rests on the rate at which the occurrence of higher order births are checked. With this in view, several countries in the developing region have launched vigorous family planning programmes with the intention of curtailing the proportion of higher order births that are presently prevailing in these regions. It is rather interesting but not surprising to note that the proportion of third order births was almost stationary at all levels of fertility. This may be due to the fact that couples, in all three regions, desire to have three children. This is an important observation because third order births happened to be undisturbed at all levels of fertility and for parities above three, the proportions differed markedly and the disparity increased with the rising order of birth. The same phenomenon has been noted by Gnanasekaran[7] too—first and second order births accounted for 70 per cent of the total births in low fertility regions whereas they constituted only 52 and 38 per cent in medium and high fertility regions respectively.

Patterns of births

An analysis of births based on the age of the mother would give an idea of the pattern by which the births are distributed at the three different levels of fertility. Table 2 furnishes the percentage of births that occur in a year by age of the mother in the low, medium and high fertility regions. These distributions have been obtained by taking the mean of the distributions of the individual countries in the three regions separately.

TABLE 2

Births (%) by age of mother

	Age of mother							
Fertility level	Below 20 years	20-24 years	25-29 years	30-34 years	35-39 years	40-44 years	45 years and above	Total
Low	9.91	33.47	29.38	16.54	8.16	2.30	0.21	100.00
Medium	10.27	28.68	27.65	18.65	10.68	3.62	0.44	100.00
High	10.80	27.42	27 02	18.29	11.33	4.05	1.07	100.00

It appears that the proportion of births in the age group 20 and below, shows a rising trend with the level of fertility. However, in the subsequent age groups, 20-24 and 25-29, it shows an inverse relationship, that is, a decreasing trend with increasing fertility. Again, in the age group 30 and above the trend changes. This relationship between the proportion of births and the level of fertility is not unexpected because in low fertility regions a high percentage of births (72.8 per cent) occur to mothers below 30 years of age and lower proportions of women progress to higher parities of four and above. On the other hand, in countries with high fertility a high proportion of women continue to move to higher parities and contribute to a high percentage of higher order births.

It has been observed that the average birth interval for women of lower parity is quite short in many of the European countries as compared with many countries in the high fertility region. Though factors like period of lactation, post-partum amenorrhoea, foetal wastage, etc., which affect the length of birth intervals, are quite different in the countries in the low and high fertility regions (and this explains partially the differentials in these factors) yet the parity progression ratios are quite high for parity four and above in the high fertility countries. The maximum number of births or the modal value occurs in the age group 20-24 at all the levels of fertility. However, the gap between the proportion of births in the age groups 20-24 and 25-29 which is wide at the lower level of fertility narrows down with a rise in fertility and the difference becomes negligible at the high level of fertility.

TABLE 3

Percentage of births of order four and above by age of mother

	Age of mother					
Fertility level	20 years	20-24 years	25-29 years	30-34 years	35-39 years	40-44 years
Low	0.22	3.05	13.66	31.75	50.40	61.41
Medium	1.38	10.90	33.07	57.62	75.15	82.33
High	2.62	18.04	49.53	75.95	86.26	89.33

Table 3 furnishes the percentage of higher order births (order four and above) to total births by age group of mothers in the low, medium and high fertility regions. It may be seen that in every age group the percentage of higher order births shows a rising trend with rise in the fertility level. Also, at all levels of fertility the figures show an increasing trend with age. It may be noted that in the age group 20-24 where the maximum number of births takes place, the higher order births (order four and above) in the low fertility region constitute only three per cent of the total. Almost 50 per cent of the total births that occur in the age group 25-29 in the high fertility countries are of the fourth order and above.

Conclusion

The implications arising out of the present analysis are of particular importance in framing population policies for fertility control. Most of the countries in Asia, Africa and Latin America, the so-called developing regions in the world, have excessive rates of population growth primarily due to high levels of fertility. High birth rates indicate the occurrence of higher order births to a large extent. For example, the sixth and higher order births constitute 25 per cent of the total births that occur in a year and surprisingly it is more than the proportion of first order births in the high fertility regions. Therefore, the task facing the countries in the developing regions for transiting from high fertility levels to low fertility levels is to check the occurrence of higher order births and precisely with this as the objective, family planning programmes emphasising the termination of births rather than spacing of births have been launched in most of the countries in these regions with the hope of getting a dividend in the form of reduced fertility in the near future.

Calculations[8] reveal that if all sixth and higher order births are avoided by the couples in these regions, a reduction of 30 per cent in the birth rate could be anticipated at the end of the ten-year period. If births of order four and above are avoided by the couples, then the reduction in the birth rate would be about 42 per cent. Of course, such a possibility is not easily achievable because higher order births do occur even at very low fertility levels. Therefore, at least one thing is clear in that the future trends in fertility in developing countries will, to a large extent, depend upon the rate of curtailing the higher order births in these countries.

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APPENDIX I

Low fertility countries

Country	Per cent births by order of birth						Total	Average birth order	B. R.	G R. R
	1	2	3	4	5	6+				
Austria	34.78	29.73	17.02	8.63	4.45	5.39	100.00	2.406	17.4	1.273
Czechoslovakia	45.11	31.59	12.23	4.88	2.46	3.73	100.00	2.045	15.1	1.014
France	38.39	27.44	15.11	7.85	4.41	6.80	00.00	2.420	7.0	1.288
East Germany	38.05	30.25	16.02	7.87	3.90	3.91	.00	2.254	4.8	1.135
Hungary	48.70	32.47	9.21	3.88	2.[illegible]	3.68	00.00	1.943	4.6	0.970
Italy	36.29	31.11	15.55	7.29	3.89	5.87	00.00	2.373	8.1	1.223
Norway	37.48	30.01	18.11	8.66	3.37	2.37	00.	2.195	7.6	1.360
Poland	37.87	27.72	15.36	8.42	4.61	6.02	00.	2.389	6.3	1.127
Sweden	40.71	37.89	14.82	4.52	1.37	0.69	00.	1.900	5.4	1.105
U. K.	37 92	31.93	16.08	7.22	3.38	3.47	00.	2.201	7.5	1.276
Yugosla	37.73	27.67	12.73	7.47	4.94	9.46	00.	2.540	9.5	1.256
Greece	43.12	36.97	12.43	4.05	1.68	1.75	[illegible]	1.911	8.7	1.172
Netherlands	39.12	30.21	15.27	7.32	3.58	4.50	00	2.247	8.9	1.369
Australia	36.35	28.27	17.31	8.95	4.33	4.79	[illegible]	2.363	9.4	1.387
U. S. S. R.	36.07	27.21	12.68	8.07	6.00	9.97	[illegible]	2.621	7.4	1.171
Japan	45.88	39.98	11.10	2.08	0 56	0.40	00.	1.730	9.4	1.082
Canada	35.96	25.66	15.45	9.10	5.25	8.58	00.	2.609	8.1	1.261
U. S. A.	35.15	25.77	15.91	9.48	5.46	8.23	[illegible]	2.571	7.8	1.255
Switzerland	40.69	31.86	15.29	6.43	2.82	2.91	[illegible]	2.107	7.7	1.148
Finland	44.39	27.77	13.66	6.55	3.29	4.34	.00	2.151	6.6	1.091
Denmark	37.54	31.19	17.16	7.96	3.41	2.74	00.00	2.187	8.4	1.271
Belgium	39.16	27.76	15.48	8.14	4.27	5.19	00	2.317	5.3	1.173
Romania	34.11	31.71	18.54	8.21	3.25	4.17	[illegible]	2.331	7.4	—
Mean	39. 6	30.53	4.89	09	3.60	74		2.528	7.2	

APPENDIX II

Medium fertility countries

Country	Per cent births by order of birth						Total	Average birth order	B. R.	G. R. R.
	1	2	3	4	5	6+				
Israel	25.70	23.45	16.86	9.57	6.18	18.24	100.00	3.337	25.5	1.851
Singapore	25.25	20.47	14.45	10.05	7.86	21.92	100.00	3.780	24.8	1.794
Ryukyu Islands	31.82	25.11	19.05	11.82	6.04	6.15	100.00	2.750	22.2	1.512
Ireland	26.14	20.30	16.12	12.26	8.25	16.93	100.00	3.447	21.0	1.914
New Zealand	33.52	27.83	18.24	9.37	4.88	6.16	100.00	2.547	22.6	1.541
Puerto Rico	27.19	20.81	15.39	9.91	6.73	19.97	100.00	3.345	27.6	1.745
Barbados	26.05	19.99	13.33	10.19	9.00	17.43	100.00	3.574	21.9	1.767
Chile	27.17	19.48	13.62	10.11	7.49	22.12	100.00	3.594	30.4	1.874
Ireland	33.36	25.05	16.93	11.55	6.07	7.04	100.00	2.594	22.2	1.606
Portugal	32.84	22.35	13.22	9.09	6.56	15.94	100.00	3.088	21.5	1.447
Cyprus	36.86	25.23	15.44	8.79	4.74	8.94	100.00	2.577	24.8	1.630
Mean	29.63	22.73	15.69	10.25	6.71	14.62	100.00	3.148	24.0	1.698

APPENDIX III

High fertility countries

Country		Per cent births by order of birth						Total	Average birth order	B. R	G. R. R.
		1	2	3	4	5	6+				
Albania	..	20.87	18.52	16.99	14.36	11.06	18.20	100.00	3.412	35.6	2.749
India	..	21.07	17.91	16 22	12.98	10.38	21.44	100.00	3.532	39.5*	**
W. Malaysia	..	18.62	16.75	14.83	12.71	10 55	26.54	100.00	4.011	35.3	2.554
Thailand	..	21.79	17.78	15.01	12.65	10.28	22.49	100.00	3.706	34.7	3.200
Philippines		25.75	5.27	1.87	1.69	9.81	25.61	100.00	3.830	40.0*	**
Algeria		19.43	0.73	.0.16	3 00	0.90	35.78	100.00	3.994	40.9	3.420
Gautem.		21.70	6.84	5.52	2.77	0.25	22.92	100.00	3.757	42.4	3.174
Mexico		20.45	6.95	4.49	2.29	9.79	26.03	100.00	3.967	43.4	3.190
Panama		21.46	7.56	4.45	1 81	9.44	25.29	100.00	3.884	38.8	2.548
El Salvador		21.27	8.34	4.26	1.63	9.35	25.16	100.00	3.812	43.2	3.166
Pakistar		15.71	4.63	4.80	4.63	1.70	28.53	100.00	4.164	49.0	3.737
Fiji Islands		24.04	7.66	.3.65	1.09	9.48	24.08	100.00	3.740	35.	**
Mean		2 .00	.06	.78	2.82	0.24	24.	00.00	3.8	39	3.082

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THE EFFECT OF A POPULATION TEXT ON STUDENT KNOWLEDGE AND ATTITUDES : TAIWAN

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Background

A supplemental high school text booklet entitled "Paste Your Umbrella Before the Rain" was prepared by the Taiwan Provincial Health Department, and was distributed to over 400,000 graduating junior high, senior high, junior college, and vocational students in April 1971. This colourful, illustrated, 45 page booklet was the first organized attempt to approach Taiwan's young people with population and family planning materials before marriage. It costs about US $0.06 per copy to produce including the cost of paper and ink procured by UNICEF. The book was accompanied by a teacher's guide of about 50 pages which gave detailed and technical explanations of the concepts presented in the text, and was sent to about 40,000 teachers, island-wide.

Content of the booklet

The booklet was intended to raise the level of student awareness and concern regarding population problems. It attempted to speak to graduating students by stressing the importance of higher education, late marriage and planning for the future. It stressed the costs associated with family life, the need to find a good job before marriage, and the goal of having children only when they can be properly cared for. Causes and consequences of the world population explosion were reviewed to add perspective to Taiwan's situation which was presented in simple terms. Relationships were explored between population growth and food supply, open space, dependency, urbanization, crowding, and economic development. Individual responsibility for these problems and the need to change traditional family size attitudes were discussed. In summary, the book suggested that students consider: getting as much education as possible, marrying late, delaying their first baby, spacing at least three years to the second child, and stopping after two or three children. No specific contraceptive methods were mentioned, though the book closed by saying that: "Free family planning consultation is provided at the local health bureaus, family planning clinics, and provincial hospitals—or from private doctors." Full page cartoons and simple charts helped raise interest and make reading the book more enjoyable.

Study population and survey design

Distribution of the book was preceded by a pre-survey conducted in February 1971 in twelve widely separated schools which were purposefully selected as being generally representative of schools in Taiwan. The twelve selected schools included three junior high schools, three senior high schools, three technical schools, and three junior colleges. Teachers in these schools received no advance notification that this survey would take place; nor were they told that a booklet would be distributed or that a post-survey would be conducted. The schools were selected to represent rural and urban populations. Students from the selected schools recorded their place of residence as 45 per cent rural and 55 per cent urban, about equal to the actual rural/urban differential in Taiwan

The post-survey was held in late May and included 1,477 from the pre-survey population, and a control group of 588 students who had not been interviewed previously. This control group consisted of students from classes not included in the pre-survey in order to detect any bias that might have been caused by the first survey.

The book was distributed just prior to examinations, was not required to be read, and was received by only 52 per cent of students in the 12 selected schools as of the second survey. Even so, 87 per cent of students in both the study and control populations reported that they had read the book within the 5-week period between distribution and the post-survey. This seems to indicate that the book was quite popular since 35 per cent more students reported that they read it than had received it.

Findings

1. *Family size ideals:* The booklet did not specifically state that each couple should stop at two children. It did, however, review the consequences of a continued high level of fertility and recommended two children, regardless of sex, as being best for the family and the nation.

Among the pre-survey population, the stated ideal family size was 3.1 children overall, and 1.8 sons. 72 5 per cent of students said that it is necessary for every family to have a boy After having read the book, this same group had a stated ideal family size of 2.8 children with 1.6 sons. Only 63.0 per cent of students said that it is necessary for every family to have a boy. The greatest change was seen among girls who had in the pre-survey stated a lower family size ideal and a lower preference for boys and who registered the greatest changes. Those who read the book in the control group registered a nearly identical post-survey response. Since virtually identical proportions of students read the book among the study group and the control group we can conclude that the pre-survey did not predispose students to read the book, nor did it act as a bias against subsequent attitude change.

TABLE 1

Pre- and post-survey family size ideals (readers only)

Item	Pre-survey N = 1277	Post-survey N = 1277	Control N = 511
Ideal number of children			
boys' response	3.2	3.0	2.9
girls' response	3.0	2.7	2.7
Total	3.1	2.8	2.8
Ideal number of sons			
boys' response	1.9	1.8	1.7
girls' response	1.7	1.5	1.5
Total	1.8	1.6	1.6

2. *Ideal age at marriage* : The booklet noted that men and women get married later and later in Taiwan. It stated that the average marriage age for men is now 27 and for women is 23.

In the pre-survey the ideal age at marriage for men was 27.4 and for women 23.6 (Table 2). In the post-survey little change was detected and the ideals were 27.6 and 23.7. The same was true of the students' perception of the best marriage age for themselves which was virtually unchanged from 27.4 for boys and 25.0 for girls in both surveys. Most significant is that the stated ideals and the average present age at marriage closely coincide.

Among both post-survey and control group respondents the small changes that did take place tended to narrow the range of responses, and reduce the difference between boys' and girls' responses. Some of this reaction is undoubtedly an attempt to give the "correct" answers of 23 and 27 as appropriate marriage ages. Some may be honest shifts toward a more "socially acceptable" ideal. This issue should be discussed before the subsequent edition of the book comes out. It does not seem to be the place of a textbook to set the ideal marriage age at a fixed level, especially when the average age at marriage is still rising.

TABLE 2

Pre- and post-survey age at marriage ideals (readers only)

	Pre-survey N = 1277	Post-survey N = 1277	Control N = 511
Ideal marriage age—men			
Boys' response	26.8	27.1	27.5
Girls' response	28.3	27.9	27.9
Total	27.5	27.5	27.7
Ideal marriage age—women			
Boys' response	22.9	23.2	23.3
Girls' response	24.4	24.1	23.9
Total	23.6	23.6	23.6
Ideal marriage age—self			
Boys' response	27.4	27.5	28.0
Girls' response	25.0	25.0	25.0

3. *Awareness of population as a problem*: Students were asked to rank ten well known government programmes in the order which they felt reflected the importance of each problem in Taiwan.

In the pre-survey the problem of population ranked sixth in importance behind: (1) expansion of free education, (2) juvenile delinquency, (3) job shortages, (4) traffic safety, and (5) air and water pollution. In the post-survey the population problem was raised to first place among the study population and second place in the control group.

The only other programme which received a significant overall change toward higher priority was pollution which remained in fifth place but shifted three tenths of a point closer to first priority. This may have been partly due to the text and illustrations which attempted to give students some conception of the ties between environmental problems, population growth, and density. The strongest overall drop was recorded in infectious disease control, possibly in part due to the realization among many students of Taiwan's low mortality figures which were presented in the booklet.

More important than the changes in overall ranking of these ten problems are the internal shifts which took place within several items. The percentage of students who ranked population first,

TABLE 3

Ranking of government priority problems and programmes from 1 to 10 (readers only)

Order in which presented	Problems and programmes	Pre-survey		Post-survey		Control group	
		priority	mean rank	priority	mean rank	priority	mean rank
2	Expansion of free 9-year education programme	1	3.94	2	4.48	1	4.06
9	Juvenile deliquency	2	4.08	3	4.62	3	4.37
8	Job shortages	3	4.74	4	4.64	4	4.44
4	Traffic safety	4	4.76	6	4.94	5	4.96
5	Air and water pollution	5	5.12	5	4.84	6	4.97
7	Population growth	6	5.27	1	4.02	2	4.36
1	Infectious disease control	7	6.15	8	6.58	7	6.40
10	Housing	8	6.54	7	6.52	8	6.45
6	Price increases	9	6.70	8	6.58	9	6.93
3	Construction of highways	10	7.69	10	7.75	10	8.01

second, or third increased from 38.2 per cent to 58.2 per cent. Conversely the percentage ranking juvenile delinquency among the top three problems fell from 48.1 to 37.6 per cent, and further expansion of the nine year free education programme fell from 50.4 to 43.9 per cent within priorities one through three. The order in which these problems were presented in the questionnaire had no significant bearing on the ranking they received.

4. *Knowledge about population problems* : A series of eleven true or false questions concerning population problems was presented in

TABLE 4

Change in knowledge about population problems (readers only)

Correct Answer	Per cent who answered correctly		
	Pre-survey	Post-survey	Control
1. Most developed countries have low population growth rates.	74.2	77.1	81.9
2. The age at marriage is rising in Taiwan.	74.4	86.3	89.4
3. Even if every couple had only two children starting now population would continue to grow for 60 years.	53 4	49.9	51.9
4. There is a way to control the number of children a couple has.	95.3	97.4	96.4
5. A good citizen has few children, not many.	86.5	88.2	91.5
6. In industrialized countries most people live in nuclear families.	88.8	93.1	96.2
7. At present growth rates Taiwan's population will double in 35 years.	80 1	82 3	79.8
8. About 1/3 of junior middle students will not go on to high school.	54.2	67 6	65.4
9. Future world food production may have trouble keeping up with population growth.	72.3	81.1	81.2
10. Almost 50 per cent of Taiwan's population is less than 18 years old.	80.2	87.9	87.1
Overall	76.4	81.5	82.9

both surveys. Answers to most of these questions could be found in the booklet, and all were amplified in the teachers' guide which was distributed at the same time as the text.

Students who read the book improved slightly their ability to correctly answer true/false questions regarding population issues and problems. In almost all cases this improvement was shared equally in the control group, which indicates that the pre-survey did not overly predispose students to search for the correct answers in the text or elsewhere. Among the questions which recorded the largest changes were several related to the central objectives of the text: pointing out the rising age at marriage, stressing the point that not all potential high school entrants can be admitted, and indicating the potential seriousness of agricultural insufficiency. Overall, ability to answer questions correctly went from 76.4 per cent to 81.5 per cent in the study group, and to 82.9 per cent among controls.

Some points were obviously not well absorbed and the method of presentation needs to be reviewed if these points are considered important. Students failed to improve their grasp of the idea that stabilizing population growth takes time (question 3). They also did not improve their understanding of the doubling time of a population (question 7). These relatively complicated concepts appeared only in the teachers' guide, which may explain this lack of a positive change.

5. *Comparison of boys' and girls' responses* : Of interest is a comparison of girls' and boys' responses. Girls consistently gave significantly higher ideal marriage ages for both men and women. They also had a lower ideal family size, a lower ideal number of sons, and less feeling that every family should have a son. In the pre-survey they felt that couples should stop trying for a boy after 2.8 girls, after reading the text they reduced this figure to 2.6. The boys showed no change in attitude on this question and their mean response was 3.0 in both surveys. Although girls' attitudes were decidedly less pronatalist than their male schoolmates, they did no better overall in knowledge of population facts or ranking of population as a problem. Deeper study of these differences might give significant insights into the changes now taking place from a male dominated agrarian society to an egalitarian industrialized system.

Conclusions and recommendations

Even though distribution of this booklet to graduating students barely preceded final examinations, and it was presented to only 52 per cent of those interviewed, it was read by 87 per cent of both the study population and the control group, indicating a relatively high

TABLE 5

Comparison of boys' and girls' responses (readers only)

Item	Respondents	Pre-survey	Post-survey	Control
Ideal number of children	boys	3.2	3.0	2.9
	girls	3.0	2.7	2.7
Ideal number of sons	boys	1.9	1.8	1.7
	girls	1.7	1.5	1.6
Ideal marriage age—men	boys	26.7	27.1	27.5
	girls	28.2	28.0	27.9
Ideal marriage age—women	boys	22.8	23.2	23.3
	girls	28.2	24.1	23.9
After how many girls should a couple stop trying to have a son?	boys	3.0	3.0	2.8
	girls	2.8	2.6	2.7
Not necessary for every family to have a son.	boys	20.4	28.3	30.1
	girls	35.4	47.0	40.0
Mean per cent factual questions answered correctly.	boys	75.7	81.5	83.5
	girls	77.2	81.6	82.3
Mean rank of population as a problem rated from 1 to 10	boys	5.22	4.05	4.29
	girls	5.41	3.97	4.43

level of interest. The changes that quickly occurred in stated family size ideals and preference for sons contrast sharply with the lack of any detectable changes among adults interviewed in successive KAP surveys. Lack of an upward shift in ideal age at marriage was most likely due to the fact that the book recommended slightly lower ideals than the students actually expressed in the first survey.

Even though the book was in their hands for only about five weeks, the students significantly changed their attitudes toward population as a problem; and also improved somewhat their knowledge of population related facts. This demonstrates the potential concern and interest for these subjects among students and the advisability of printing further editions of this book. It also argues for a thorough review of textual and teaching materials to make them more relevant to student concern for topics such as population and environmental problems.

Before the next edition of this text is published, conceptual and factual materials should be simplified to enhance learning, or deleted if too complicated for the average student. Negotiation is now under way between the Taiwan Provincial Health Department which produced the book, and the Provincial Education Department, to determine (1) who will finance and publish subsequent versions, and (2) whether this booklet could be incorporated into the required curriculum. This first step in population education has also helped open the door for textbook revision and teachers training pilot projects.

Postscript

This study was not intended to be representative of all Taiwan, but was only designed to indicate the short term effect of distribution of the text and teachers' guide in 12 selected schools. It was designed to provide guidelines for subsequent editions within the shortest possible time period after distribution. The post survey was conducted in late May. By early August the results of the study had been reported to the government. This study was purposely designed to be methodologically simple, and this report reflects that lack of sophistication. No attempt has been made to study the differential effect of this text on students at different educational levels or from differing backgrounds. The sample was not designed for this purpose, but for the broader objective of providing overall guidance to the government. It is hoped that others who are thinking of introducing texts of this nature will profit from Taiwan's experience.

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ADDITIONAL CONSIDERATIONS OF FAMILY SIZE IN INDIA

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The purpose of this paper is to bring together some of the findings of past studies dealing with India's population problem, and to develop new hypotheses. While there have been many studies of the factors involved in India's high birth rate and rapid population growth, I am concerned here only with some of the social and psychological factors within Indian society which may have an effect on natality patterns and birth rates. The factors considered here have been chosen because past research has indicated that they may be of some value in answering important questions about India's population problem.

The government of India has a serious campaign underway to control population growth. Nevertheless, India's decennial population growth rate for 1961-1971 was 24.57%, up from the 1951-1961 growth rate of 21.64%.[1] Although this rate was lower than anticipated by government experts it was still much higher than that desired by the Indian government. The Indian birth rate must also still be high for such population growth to have occurred. This paper will delineate possibilities for future research useful in analyzing the causes behind these high rates.

Son preference

One of the major factors believed to positively influence high natality is the desire for sons. This desire has been considered a possible explanation of the apparent discrepancy between reported ideal family size and actual family size Many surveys have reported a family size ideal of three or four children, with the lower figure predominating in urban areas.[2] However, studies of acceptors of birth control methods have shown that most couples had more than this ideal number before they began using contraception. Follow-up studies of IUD acceptors have found them to have a high average number of previous pregnancies, and a mean number of living children between three and four.[3, 4, 5, 6] Their completed fertility will be even higher due to the fact that fifty percent of the women either expelled or removed the loops within eighteen months of acceptance.[7] Follow-up studies of vasectomy acceptors are even more sobering. These show that the average age of the aceptors is high, 39.6 years[8] and that they have already had more than the supposed ideal number of children.[7, 8, 9, 10, 11]

Since these facts have come to light, interest has focused on this apparent discrepancy between ideal and actual family size. One of the areas investigated has been the specific desire for male children. Most of the early studies done on attitudes about ideal family size did not investigate the number of sons and daughters desired.[2, 12] Other and more recent studies have shown that a specific sex ratio* is desired. When three children are considered ideal, two boys and one girl is the desired combination.[7, 13] At least one son is considered essential in each family.[14] This ideal sex ratio and family size are desired even by well educated "modern" young women in India. In a sample of unmarried women taking post-graduate courses it was found that thirty-three per cent preferred two children, one boy and one girl, while twentyfive per cent preferred three children, two boys and one girl, and thirty-two per cent preferred four children, two boys and two girls.[15] Some studies have investigated the number of female children a couple would be willing to have before they would stop trying to have a son. One study of an Indian village found that eightythree per cent of the couples said they would have four or more girls before halting their attempts to have a son, and *fifty* per cent would have six or more. Only 1.6 per cent of the mothers, and 35.2 per cent of the fathers would stop at three girls.[18] Agarwala[10] in his study of four Indian villages found that the only couples with five children who desired more were those whose children were all of the same sex. The women wanted a female child only if there was no living daughter in the home.

The reasons behind this apparent desire for male children, and the concomitant lack of desire for daughters, have also been investigated. Gupta[17] mentions the important ceremony (sraddh) of a post-death offering to ancestors which can only be performed by a son. Parents without a son to perform this ceremony are believed to descend to "pum" (hell) after death. Sons are also seen as economic help on a farm, while daughters are not as productive; on the contrary, daughters are soon lost to the family because of early marriage, and are the cause of heavy marriage expenses. Also, a female is considered unclean and untouchable during menstruation, making

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The sex ratio is usually used to express the number of males relative to the number of females. Thus, if there are more males the ratio number will be greater than one.

maturing daughters undesirable in the household. Sons are considered very important as providers for their parents' old age. Care of the parents in their old age was listed as a benefit of having a son by seventyfivè per cent of the husbands and seventyone per cent of the wives studied by Poffenberger.[13] Another twenty-seven per cent considered the son important in maintaining the family lineage. Only twentynine per cent of the husbands and thirteen per cent of the wives listed the help a daughter could give to her mother as a benefit. The majority of the couples felt that there was no benefit in having a daughter, while there were disadvantages, such as the cost of her marriage. The only possible disadvantage of a son listed by the parents was that he might not be a good son, and might not take care of his parents in their old age.

These studies of ideal sex composition of a family and the reasons behind this ideal emphasize the fact that the ideal number of children cited by Indian parents refers to the number of surviving children, especially sons. The fact that the death rate has been going down in India has led to the speculation that the number of sons desired would drop when the couples realized the increased chances for their children's survival. However, a computer simulation of son survivorship and family size in India has shown that an average of 6.3 children are needed for nineyfive per cent certainty that at least one son will survive to the father's sixty-fifth birthday.[18] Therefore, given the proposed motives, the desire for large families with many sons is not unrealistic.

Evidence that large family sizes in India are the results of ensuring the survival of at least one son comes from studies of acceptors of birth control. These show that not only do acceptors have a high fertility but they have a large number of sons. One study of IUD users found that the average number of living sons was 2.1, and the average number of daughters was 1.6.[19] A study of men with vasectomies found that the average number of sons was 2.9, while the average number of daughters was 1.9.[11] Two other vasectomy follow-up studies found that none of the men who had vasectomies were without sons.[8 9] The Chitre study, a random sample of 200 out of 800 men, found that the men had the following number of sons: 3 per cent had one, 23.5 per cent had two, 31 per cent had three, 26.5 per cent had four, 9.5 per cent had five, and 6.5 per cent had six or more. These men also had a very high total fertility rate, with 35.5 per cent having more than six children. Pressure[20] reviews the findings of twenty studies of persons undergoing sterilisation in India. She states that the mean and median number of living children range from a low mean of 3.1 to a high median value of 5.6, again indicating a high total fertility.

These studies seem to point very convincingly to the hypothesis that Indian couples do not curb their fertility unless they have, or have tried to have, at least one son. However, most of these studies are descriptive studies, examining only the attitudes of people, or end results (the follow-ups), and then hypothesizing the effects or causes. Only one study has taken this son-preference hypothesis and tested it. This is Repetto's study[21] of fertility behaviour in three countries: India, East Pakistan, and Morocco. Repetto generated specific testable hypotheses from the concepts and propositions underlying the son-preference hypothesis. The basic hypothesis states:

> "Women whose first two or three live births (or live births surviving until the time of the survey) are male should have smaller total fertility than women whose first two or three children are female; or, smaller total fertility than other women of the same population and age cohort, on the average." (p. 71).

The hypotheses were tested by examining the fertility behaviour of women with three or more live births. One of the important points of this study is the examination of the order of the births, something which had not been previously considered, but is obviously relevant. This study was very carefully done: the age groups of the women, the number of years of marriage, the number and sex of surviving children, and the possible biased reporting of births by sex, were all considered. The "ideal" sex composition of two males and one female was associated with the *largest*, not with the smallest, number of subsequent pregnancies and births. This association in the Indian samples studied was not significant, implying that the achievement of the ideal family composition has little if any influence on subsequent fertility. The East Pakistan survey found a significant *positive* association between the ratio of living males and the total number of living children. Repetto's final conclusion is that there is " . . . no support whatever for the idea that in countries with son preference, the limitation of fertility is constrained by the strong desire to ensure the survival of one or more sons." Rather, it seems that the opposite may be true, families who lack sons or have a high proportion of daughters, tend, other things being equal, to have smaller families, whereas families with a high proportion of males tend to have larger families. If these conclusions are correct, how can the results of previous studies be interpreted? Repetto suggests that the relationship between contraceptive use and high sex ratio may be spurious, because contraception (or sterilisation) acceptors tend to have a high fertility which is itself associated with a high percentage of sons. Why is there this association? Repetto's hypothesis is that fertility limitation may be a response to demographic pressure, the pressure of many dependents on a limited family income. He believes it is probable that the need or desire to limit fertility does not become salient until the family feels considerable population pressure. If it is true that sons contribute more to family production and income than do daughters, or at least impose less of a financial burden, then families with a high number of sons should feel less demographic pressure, other things being equal, than those with a high percentage of daughters. The need to limit fertility would become salient later in the reproductive history of families with many sons. This hypothesis is not consistent, however, with the findings from the "attitude" studies which indicated that families were planning to have many female children before stopping their attempts to have a male child. The key concept here is attitude. The problem with all attitude studies is that attitudes may have been based on ideal concepts with little basis in reality and experience, and they may change. After having three girl children the economic realities of the situation may force themselves on the parents, causing them to give up trying for a son.

Economic motivations

There is ample evidence that Indian parents do perceive the economic pressures resulting from many children. Economic motives are frequently expressed by those who use IUDs or receive vasectomies.[5, 9, 22] Another reason given very often by IUD or vasectomy clients is "too many children," which may indicate an unexpressed economic motivation. In a survey of four Indian villages, 19.4 per cent of the respondents gave an economic reason for not wanting more children. The only reason given more often (38.4%) was "too many children".[16] The low fertility attitudes discovered by Poffenberger[13] in a village study were mainly economic ones, i.e., in a small family everyday expenses would be lower, a higher standard of living would result, the division of land and wealth would be avoided, and marriage and ceremonial costs would be less. One half of the men and women expressed concern with economic problems involved in rearing a large family. But if economic motives do play an important role, then why do most Indian families wait so long before using birth control?

There are two conditions which must be met before contraceptive use is probable. First, the parents must be able to perceive the connection between their economic condition and the size of their family. Repetto hypothesized that families with many sons will feel this "demographic pressure" later than families with a lower sex ratio.

Research needs to be done in this area to determine if this hypothesis is correct. Investigation also should be done to discover the *actual* economic liabilities and benefits of children according to sex, in different areas and for different ethnic and economic groups in India. Repetto[21] has suggested some of the factors which should be considered in such research: the effect of social, legal and institutional influences on distribution of income within the family; the effect of differences in capacity of children to contribute to family income; the differences in return on investment in children's education, or differences in potential earnings of the wife outside of the household.

Fatalism and subjective efficacy

Second, an individual must not only perceive the connection between economics and family size, but he must feel he can do something about his situation. Some authors believe that Indians are fatalistic and do not feel they have much control over their lives. Rao[23] states: "The concept of planning implies a certain control the individual has over his environment. Indians, particularly villagers, tend to be fatalistic basically and how much planning takes place in their lives is unknown." However, Rao neither explicitly defines what she means by fatalistic nor provides any data to back up her assertion. In his study of an Indian village, Poffenberger[13] states that about fifty per cent of his female respondents had fatalistic attitudes about family size. Fatalistic responses were defined as those which mentioned God, fate, or luck as being influential in determining the number of children in a family. The problem of definition is obviously an important one. Wishik[21] has pointed out that there are two aspects to the fatalism concept. First there is the individual's attitude toward events outside his personal life (though not necessarily his experience)—his general attitude toward the world. On another level there is the problem of how an individual perceives the amount of control he has over his *own* life. The greater he feels his control to be, the greater will be his feeling of subjective efficacy (a term used to indicate the fatalism concept in its individualistic aspect). These two aspects of "fatalism" are seldom differentiated, yet there is no evidence that they are interchangeable. An individual could be fatalistic about general world events and yet feel quite in control of his own life. The studies which have attempted to relate fatalistic attitudes to family planning practices have not differentiated these two aspects. An unstated and probably unrealised assumption is made that fatalistic attitudes are the same as, or go hand-in-hand with, a low degree of subjective efficacy. Therefore, the examination of the following research includes a careful look at the definitions and assumptions involved.

One study of male factory workers in India investigated the relationship between their attitudes to birth control and their degree of "subjective efficacy".[12] In this case subjective efficacy was defined as the feeling that one is in a position to control one's fate, can cope with the present environment, and has the possibility of making an impact on the environment. While this definition seems identical to our definition of subjective efficacy, the important question is the method of measurement used. An index was constructed by the use of fourteen questions selected from a larger set of questions, the answers to which were dichotomized into high and low subjective efficacy categories. An examination of these questions indicates to me that the two aspects, fatalism and subjective efficacy, were not really differentiated. Many of the questions dealt with events distinctly outside of the individual's personal life, as for instance question EF-11 (page 338):

Which is most important for the future of (this country)?

1. The hard work of the people.
2. God's help.
3. Good planning on the part of the government.
4. Good luck.

Some of the questions did deal, however, with personal events, such as question RE-11 (page 39):

> A man's wife is gravely ill. He obtains the best possible medical care, and he also prays fervently (and with a pure heart). She finally recovers. Which do you think was more important in her recovery, prayer or medical care ?
>
> 1. Prayer.
> 2. Medical care.
> 3. Both.

It appears therefore that the index of subjective efficacy may actually reflect something else besides the stated definition. Both aspects of the fatalism concept seem to have been measured to some degree but were not differentiated. Regardless of this, the study did find that "subjective efficacy" was positively correlated with favourable attitudes to the use of birth control. Although the correlation was small it compared favourably with the correlations with social variables, such as education. "Subjective efficacy" was also found to function more as an independent variable than as an intervening variable, though it also played a major role in this way. Another study[25] (Pareek and Kothandapani, 1969), using the same data as Williamson, found a statistically significant correlation between lack of fatalism and both a small family size ideal and a favourable attitude to birth control. Unfortunately this study neither defined fatalism nor indicated how it was measured. The evidence from these studies suggests that feelings of subjective efficacy and/or fatalism may have an effect on the acceptance of family planning. Unfortunately these were studies of attitudes about, not actual practice of, birth control. Studies are needed which investigate the relationships to the actual practice of birth control. Although none have been done for India such a study has recently been completed in Korea.[26] It is worthwhile examining this study for its possible implications for India.

The Korean study used data from a nationally representative sample of currently married women below the age of forty-four, totaling 1883 respondents. Many psychological factors were considered in relation to family planning variables, two of which dealt with the concepts of subjective efficacy and/or fatalism. One was included in the value-orientations and was called the "mastery orientation". It was an attempt to measure the woman's orientation to nature, which was divided into three categories: control over nature by man (mastery), co-existence of man and nature (harmony), control of man by nature (subjugation). It was hypothesized that:

> ". . . if a woman's general man-to-nature orientation is such that man is the master of nature who is able to control his own fate as well as nature rather than being subjugated by or being deferent to nature, she should be more positive in controlling her own fertility as well as other life matters in general." (p. 15)

The results of the study indicated that the "mastery orientation" was significantly associated with family planning behaviour, but only to a small degree.

The other pertinent factor dealt with was called the "non-fatalistic press". The hypothesis proposed was that "those who perceive their environment as being more supportive of . . . non-fatalism are more likely to practice contraception and induced abortion and to know more about family planning" (p. 163). It was found that the non-fatalistic press was *not* significantly associated with birth control practice or knowledge of birth control. However, as the authors point out, the questions used to measure this factor dealt with the practice of traditional activities and may not actually reveal a fatalistic outlook (in whatever way it is defined). Thus, in this case the definition of the non-fatalistic press and its method of measurement are not relevant. What, however, did the first finding mean ?

The mastery orientation as described above contains both aspects of the fatalism concept. Examination of the eight questions used to measure this orientation reveals that three of the questions are of a general type (Nos. 89, 101, 109), i.e.,

89. Man
    - a. should exert himself to live in accordance with his destiny.
    - b. is controlled by his destiny
    - c can change his own destiny. (p. 336)

The others deal with more specific topics, such as:

105. If land is not good for farming,
    - a. I will move to where the land is fertile
    - b. I will live with what I have.
    - c. I will make efforts to change the quality of the land for the better. (p. 337)

It appears that this index also measures both the subjective efficacy and fatalism aspects without differentiating them. Thus, it is impossible to decide if one or the other is more influential in affecting birth control practices. Is it possible that if subjective efficacy were measured alone that the strength of the relationship would be stronger ?

The above studies indicate the need for more exact and consistent definitions of the factors being investigated. Creating different terms to indicate the same concept is confusing, but worse yet is the ability to *cross-evaluate* studies due to the use of inconsistent definitions and measurements.

Once more exact definitions exist, the methods used to measure these concepts need to be improved. Past research suggests that the degree of subjective efficacy may influence birth control practices by Indians, but before any conclusions can be reached more definitive measurement techniques must be consistently applied.

A new set of hypotheses

Consideration of the preceding evidence has led me to form a new set of hypotheses concerning the factors discussed above and their relation to Indian fertility rates. The following concepts form the basis of the propositions and hypotheses that follow:

1. Economic well-being : the quality and quantity of food, clothing, shelter, and other human necessities.
2. Small family (low natality) : three or less living children.
3. Large family (high natality) : four or more living children.
4. Completed family : the total number of living children a couple has after the completion of the wife's final pregnancy.
5. Final pregnancy : the last pregnancy in a woman's life, usually only determined retrospectively after menopause, unless sterilisation is present.

6. Sex ratio: the number of living sons relative to the number of living daughters.
7. Subjective efficacy: the feeling that one is in a position to control events in one's life.
8. Fatalism: the feeling that events outside one's personal life are not under one's control.

The last concept needs further elaboration. As discussed above "fatalism" is seldom if ever adequately defined by research workers, as well as usually being undifferentiated from the concept of subjective efficacy. The two concepts are theoretically different. Rather than assuming that a high degree of fatalism is highly correlated with a low degree of subjective efficacy the assumption should be tested. Questions which probe an individual's attitudes to events outside his personal life can be differentiated from questions which concern events in his own life. The above definition of fatalism was arrived at after examining the different ways an individual can view the determination of events. These are: (1) that events are pre-determined by "fate" or "God" or "luck", and thus all humans are powerless to change them; (2) that events are determined by specific antecedent causes, but that these causes are not under human control, therefore all humans are powerless to change the events; (3) that events can be controlled by certain humans, but not by oneself; (4) that events can be controlled by oneself. Although I think that only the first point of view should really be classified as fatalism all of the first three leave the individual feeling *personally* powerless to change events. Therefore, both subjective efficacy and fatalism are here defined in personal terms. The following set of propositions is formed from the above concepts.

Propositions

I. There is a negative relationship between the economic well-being of a family and the number of living children in the family.

2. For the majority of Indian couples anything but a small family is economically disadvantageous.

3. Individuals will desire a family size consistent with their economic desires for their family.

4. Most Indian couples are able to perceive the relationship between family economic well-being and the number of children, but usually only *after* they have had at least a small family.

5. There is *no actual* relationship between the economic well-being of a family and the sex-ratio of the children in the family.

6. Most Indian couples *perceive* a *positive* relationship between

the economic well-being of their family and the sex ratio of their children.

7. Most Indians have a fatalistic outlook on life.

8. Most Indians have a low sense of subjective efficacy.

9. Individuals who have a low sense of subjective efficacy tend not to use birth control, or to use it sporadically and ineffectively.

10. Individuals with a low sense of subjective efficacy who do use birth control do so only after their desire for family limitation has become intense due to their attainment of a large (or very large) family size.

Proposition 5 is presented in the null form because no evidence exists that sons or daughters have a differential effect on the economic well-being of an Indian family. This is one of the areas mentioned above which needs investigation to determine the existing conditions. Propositions 7 and 8 also need verification. They are stated in positive terms because other authors have assumed them to be so.

Hypotheses

Using the above set of propositions the following set of hypotheses was formed:

1. Persons who have a fatalistic outlook on life will tend to have a lower sense of subjective efficacy than persons who do not have a fatalistic outlook.

2. Married couples who *both* perceive the relationship between family economic well-being and family size, and who have a sense of subjective efficacy, will tend, other things being equal, to use contraceptives more often, and to have smaller completed family sizes, on the average, than couples who do not perceive this relationship and/or lack a sense of subjective efficacy.

3. Married couples who effectively use contraceptives or sterilisation to achieve a small completed family size will tend, other things being equal, to have a great sense of subjective efficacy, and to be more aware of the connection between economic well-being and family size, than those couples who use contraception only *after* having achieved a large family size (complete or not).

4. Married couples who achieve a small completed family size will tend, other things being equal, to *better* perceive the relationship between economic well-being and family size, and to have a greater sense of subjective efficacy, on the average, than couples who achieve a large completed family size.

5. Married couples who achieve what they perceive as an economically favourable sex ratio in their family will tend, other things being equal, to have a larger completed family size, on the average,

than those couples who do not achieve this.

The above sets of hypotheses and propositions are all based, at least in part, on research findings or implications. The important variables of contraceptive use and family size (natality) are stated in terms of *actual* use and *real* size, not as attitudes. I believe it is time for research in this field to begin dealing with *actual* events. Earlier, when India's population control programme had just begun, the investigation of attitudes was relevant and necessary. But now that contraceptives are much more widely available in India, it is more important to investigate the *actual practices* of married couples rather than their *attitudes* to family size and family planning. The sociological factors which are hypothesised to affect contraceptive use and natality are, on the other hand, less definite and more difficult to study. Fatalism and subjective efficacy have already been investigated to some degree. The indexes used by Chung et al[26] and Williamson[12] could be refined to differentiate between these two concepts and then used to test some of these propositions and hypotheses. The first propositions that must be investigated are those concerning the degree of fatalism and subjective efficacy of Indians. The degree to which these two attitudes are related to each other, and to the use of contraception could then be determined. Perception of the relationship between economic well-being and family size has not been studied to date. Intensive interviewing, such as used by Poffenberger[13], might be used to measure such perceptions. Both these variables must be carefully and consistently defined. If the methods of measurement are based on clear definitions and consistently applied in different studies, then I believe they can be used to test the hypotheses presented.

Summary

Past research on some of the possible social and psychological influences on India's natality and population rates revealed some possible answers to previously unsolved problems. There are indications that the discrepancy between ideal and actual family size is more apparent than real. Ideal family size appears to mean completed family size with a certain sex ratio. Evidence also shows that with present mortality rates the present birth rate is a realistic one given a certain desired completed family size. Other studies indicate that the desire for sons may not be what was previously hypothesized. Economic motives may be more important. The ability to perceive the connection between economic conditions and family size may be important in determining contraceptive use. The degree of subjective efficacy felt by a person may also be influential.

Consideration of this evidence has led me to the redefinition of concepts used, as well as the formulation of new propositions and hypotheses. Testing of these hypotheses could result in the resolution of unsolved problems, and could be beneficial in efforts to curb India's population growth.

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DEMOGRAPHIC AND SOCIO-ECONOMIC CHARACTERISTICS OF FEMALES STERILISED IN CAMPS

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The "camp approach" has been accepted by a number of States for achieving the family planning targets set by the Ministry of Health and Family Planning of the Government of India. It has also been reported that the approach has not only helped in achieving these targets but even in surpassing them in some of the States. It would, therefore, be interesting to study the characteristics of the persons sterilised in these camps

In the present study, an attempt has been made to analyse the characteristics of 845 females sterilised in mass tubectomy camps organised by the Family Planning Association of India in the Thana district in Maharashtra State in 1971 The findings have also been compared with similar studies conducted elsewhere. These include mass camps held at Gannavaram[1] in Andhra Pradesh (2,180 cases), Ainpur[2] and Bhalod[3] in Maharashtra (282 and 438 cases respectively), and Ratti in Himachal Pradesh (253 cases). The comparative study, it is hoped, will throw some light on the background of females who usually come to such camps for a sterilisation operation and also provide a comparison between the background of women sterilised in camps and those sterilised in clinics.

Regular educational, motivational and clinical family planning programmes of the Association and the Government have been going on in Thana district for several years During the campaign period intensive efforts were made by the Association in cooperation with the Zilla Parishad to persuade as many eligible persons as possible to acept sterilisation. During this period, the cash incentive was doubled and an additional incentive was also given to the motivators

Demographic and socio-economic characteristics

1. *Age*

The Thana study shows that 65 per cent of the females who were operated were between 25 to 34 years of age whereas 67 per cent of the adopters at Gannavaram, 78 per cent at Ainpur and 75 per cent at Bhalod were in this age group (Table 1). The mean age of the adopters was the lowest (27.4) at the Ratti Tubectomy Camp in Himachal Pradesh. In Maharashtra State, the mean ages of the females sterilised in camps were 32 both in Ainpur and Bhalod and 31.9 in Thana.

TABLE 1

Percentage distribution of adopters by age at time of operation

Age group (years)	Gannavaram camp 1967	Ainpur camp 1968	Bhalod camp 1968	Ratti camp 1969	Thana dist. camp 1971
Below 24	—	0.4	2.3	71.5	5.3
25-29	67.0	23.1	21.1		26.6
30-34		54 6	54.3	28.1	38.3
35-39	—	19.9	20.3		23.8
40 +	—	2.1	2.0	0.4	5.8
Information not available	33.0	—	—	—	0.1
Total cases	2,160	282	438	253	845
Mean age (years)	29.7	32.0	32.0	27.4	31.9

2. *Number of living children*

The average number of living children of the adoptors was four or more in all the studies, the minimum being 4.0 at Gannavaram and the maximum 4.8 at Ainpur. In Maharashtra, the average number of living children were 4.8 at Ainpur, 4.5 at Bhalod and 4.6 at

TABLE 2

Percentage distribution of adoptors by number of living children

Number of living children	Gannavaram camp 1967	Ainpur camp 1968	Bhalod camp 1968	Ratti camp 1969	Thana dist. camp 1971
1	—	—	—	18.6	26.3
2	—	0.7	4.3	—	0.4
3	—	15.2	18.0	37.9	5.1
4	—	29.5	28.5		21.8
5	—	27.0	30.0	43.5	25.0
6+	—	27.3	19.2		21.5
Mean	4.0	4.8	4.5	4.2	4.6

Thana. Eighty-four per cent of the adoptors at Ainpur, 78 per cent at Bhalod, 62 per cent at Ratti and 73 per cent at Thana had more than three living children at the time of operation (Table 2).

The Thana study also shows that the average number of male living children was higher than the average number of female living children (Table 3). This dominance of male over female living children has been observed at all ages of acceptors.

TABLE 3

Average number of living children of adopters by age

Age group (years)	Average number of living children		
	Male	Female	Total
Below 24	2.02	1.31	3.33
25-29	2.31	1.48	3.79
30-34	2.56	2.05	4.61
35-39	2.72	2.53	5.25
40 +	3.24	2.73	5.98
All age groups	2.54	2.02	4.56

3. *Religion*

All the studies reviewed here show that over 90 per cent of the operated females were Hindus. In Thana, nearly 94 per cent of the adopters were Hindu, 3.1 per cent Muslim, 3.3 per cent Christian and 0.1 per cent belonged to other religions (Table 4).

TABLE 4

Percentage distribution of adopters by religion

Religion	Gannavaram camp 1967	Ainpur camp 1968	Bhalod camp 1968	Ratti camp 1969	Thana dist. camp 1971
Hindu	90.2	96.1	98.6	NA*	93.5
Muslim	3.1	1.1	1.4	NA	3.1
Christian	6.7	—	—	NA	3.3
Others	—	2.8	—	NA	0.1

* Data not available.

The religious composition of the residents of the areas where the camps were organised is not known.

4. *Education*

Well over 65 per cent of the adopters were illiterate according to four of the five studies reviewed here and the only exception was

Bhalod where only 34 per cent of the adopters were illiterate. At the Thana camps, over 70 per cent of the adopters were illiterate, 15 per cent had received primary education or below, 7 per cent had been to middle school, 1.5 per cent had had a high school education and no information was available regarding the educational status of nearly six per cent of the adopters (Table 5).

TABLE 5

Percentage distribution of adopters by education

Educational status	Gannavaram camp 1967	Ainpur camp 1968	Bhalod camp 1968	Ratti camp 1969	Thana dist. camp 1971
Illiterate	65.7	68.4	34.2	84.2	70.3
Primary and below	33.7	13.8	65.8	13.4	15.0
Middle school	—	—	—	1.6	7.2
High school/S.S.C.	0.6	—	—	0.8	1.5
Information not available	—	17.8	—	—	5.9

5. *Occupation of husband*

The Thana study shows that the majority of the adopters (63.2%) were engaged in agricultural occupations. The second largest group (23.4%) held salaried jobs and 8.4 per cent ran their own business. While 0.5 per cent were engaged in other odd jobs, 1.3 per cent were unemployed. Occupational data are not available for the other camp studies.

6. *Monthly income*

Ninety-one per cent of the adopters at the Gannavaram Camp, 58 per cent at Bhalod, 81 per cent at Ratti and nearly 50 per cent at Thana came from low income groups with monthly incomes below Rs. 100 (Table 6). While 39 per cent of the adopters at the Bhalod and 44 per cent at Thana camps belonged to the middle income (Rs. 100-300) group, only three per cent of Bhalod acceptors and five per cent of the Thana cases had monthly incomes of Rs. 300 or above; the Gannavaram and Ratti camps did not get any acceptors belonging to this income group.

Conclusion

An analysis of the five camp studies gives the comparative demographic and socio-economic background of tubectomy adopters in Andhra Pradesh, Himachal Pradesh and Maharashtra States. The

TABLE 6

Percentage distribution of adopters by monthly income

Monthly income in Rs.	Gannavaram camp 1967	Ainpur camp 1968	Bhalod camp 1968	Ratti camp 1969	Thana dist. camp 1971
Below 100	91.0	—	58.2	81.4	49.5
100-200	9.0	—	34.9	18.6	27.8
200-300		—	4.1		15.7
300 +		—	2.8		4.6
No income	—	—	—	—	0.9
Information not available	—	100.0	—	—	1.4

main findings observed from these studies are:

1. The mean ages of females sterilised in camps at the time of operation were 30 at Gannavaram in Andhra Pradesh, 27 at Ratti in Himachal Pradesh and 32 at Ainpur, Bhalod and Thana camps in Maharashtra.
2. The average number of living children was four or more according to all the camp studies reviewed here.
3. More than 65 per cent of the adopters were illiterate except those at the Bhalod camp.
4. In almost all the cases the majority of adopters had monthly incomes of less than Rs. 100.

ACKNOWLEDGEMENTS

The author is grateful to Mrs. Avabai B. Wadia, President of the Family Planning Association of India, and to Miss Kamala Rao, Executive Secretary of the Association, for her valuable suggestions.

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NEWS & NOTES

THE WHO SMALL SUPPLIES PROGRAMME

The objective of the WHO Expanded Programme of Research, Development and Research Training in Human Reproduction is to increase understanding of human reproductive processes leading to the development of a variety of safe, acceptable and effective methods for the regulation of human fertility. A problem often encountered by investigators engaged in relevant research is difficulty in obtaining relatively small quantities of essential supplies. Lack of these supplies is frequently a serious obstacle to research.

To meet this problem, WHO has included a Small Supplies Programme within the framework of the Expanded Programme. The Small Supplies Programme is intended only for assisting scientists in developing countries or scientists in developed countries having exceptional difficulties in purchasing goods abroad.

Within the limits of the funds currently allotted for this pilot scheme, WHO is prepared to supply to such scientists :

(a) small quantities of supplies, reagents, labelled compounds, and standards ;
(b) small equipment ; or
(c) spare parts or accessories for existing equipment.

WHO will provide this assistance on the following conditions :

1. The supplies must be essential to a research project that is concerned with the regulation of human fertility and relevant to the aims of the Expanded Programme as stated above.
2. The items requested are required as an emergency.
3. The support requested will be modest and in no case entail expenditure in excess of $250 for a period of 12 months.

So that eligibility may be determined, to avoid undue delay, and to ensure that the correct items are obtained, the following information should be sent to the Small Supplies Programme (D), Human Reproduction Unit, World Health Organisation, 1211 Geneva-27, Switzerland :

1. Name of institution and department.
2. Consignee, shipping address, and shipping instructions.
3. Title and brief description of research project (s) in reproduction relevant to the regulation of human fertility for which the item (s) will be used.
4. Complete description of the item (s). If spare parts or accessories are required, indicate the make, model, year and serial

number of the main piece of equipment. For chemical reagents, indicate the standard required, e.g. reagent grade, chemically pure, etc. For labelled compounds indicate the specific activity and number of curies. For electrical equipment or accessories specify the current, cycles, number of phases, and voltage as appropriate.

5. Name the supplier and current catalogue reference number.
6. Quantity (where relevant).
7. Cost.

Once a request is approved, WHO will make every effort to obtain the supplies as rapidly as possible.

CORRECTION

In the article on *Industry and Family Planning: Some Case Studies* which appeared in Vol. XIX, No. 3, the following corrections may be noted:

In Table 1 on page 75, under TISCO Mines, the employee strength for *Noamandi Mines* is 5,800 and not 125,000. The total employee strength of the Tata companies listed in the table thus adds up to 88,935 and not 2,08,135. Also, the percentage of employees sterilised is 15.3 and not 6.6.

It may be mentioned here that data regarding companies like TELCO, Jamshedpur and Poona, National Electronics, and Industrial Perfumes, which were not available at the time the paper was written, indicate that as on 31st December 1971, the total sterilisation figure for all Tata Companies with family planning programmes stood at 21,610. The employee population was 1,04,418 thereby giving a sterilisation rate of 19.07 per cent.

THE FAMILY PLANNING ASSOCIATION OF INDIA

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Clauses 8 to 18 deal with administrative and financial subjects

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KNOWLEDGE OF CONTRACEPTIVE METHODS IN A RURAL AREA

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and
SMT. M. BHAS
(Statistical Assistant)
(Rural Family Planning Project, Allahabad Agricultural Institute, Allahabad)

This paper reports the extent of knowledge regarding contraceptive methods in a rural population in eastern Uttar Pradesh and examines some of the associated variables. Several studies have been done—the standard KAP studies—but few, if any, report of such logistically difficult rural and backward areas and are specific to knowledge of modern contraceptive methods.

Materials and methods

The study is part of the Rural Family Planning Project, sponsored by the Family Planning Association of India at the Allahabad Agricultural Institute.

At the start of the project, a survey was conducted to establish baseline parameters relative to demographic and fertility variables. For the purpose of this larger survey, a ten per cent systematic random sample of households was interviewed. From the 3,000 households selected for the larger survey, 500 were further identified for determining the knowledge related variables. In addition to determining data for programme planning, the survey was also to establish a benchmark so as to enable evaluation of the Project's performance over time with respect to its communication activities. The interviewing was completed in December 1971 and the findings are applicable to that date. RFPP field operations commenced afterwards.

Out of 500 sample households, 482 could be interviewed. The loss due to attrition of 3.6 per cent (18 households) represents those households where the couples had moved out or were unwilling to answer questions. In all households where contacts could not be established at the first visit, upto three more visits were made and if no contact could be established after that the household was dropped from the sample without replacement.

The interviewing instrument was pretested and the actual responses were recorded on it. Coding was done subsequently. All the interviewers were from this area, familiar with the dialect and were given an intensive two-week training prior to the survey.

In half of the households (every alternate) the wife was interviewed and in the other half the husband. The interviewers were of the same sex as the respondents.

Data analysis

For the purpose of the present paper responses were classified into—

No knowledge of any contraceptive method
Knowledge of one or two contraceptive methods
Knowledge of three or more contraceptive methods

Further analysis was by sex, age, caste, occupation and education. Analysis by parity is not being reported because of its close correlation with age. Analysis by income was not done as data on income in rural areas is usually unreliable.

Extent of knowledge

Table 1 shows that only 40.5 per cent of the persons had knowledge of any contraceptive method and could give a positive response when asked the simple question "do you know of any method which can prevent or delay a birth". The males, however, had more knowledge than the females.

Age

Table 1 shows that the knowledge of contraceptipe methods is not related to age. This is contrary to the findings of Naidu[1], Krishnamoorthy[2] and Bharati Devi[3].

Religion/Caste

Table 2 shows that the knowledge of contraceptive methods is not related to the religion or caste of the respondent.

Education

The extent of knowledge of contraceptive methods is significantly and positively related to the level of education (Table 3). This data is presented for males only, since 96.3 per cent of the females were illiterate. In this area, the literacy amongst males is 36.4 per cent and 25.4 per cent have ever gone to school[4].

TABLE 1

Knowledge of contraceptive methods by age, sex and number of methods

Age (years)	Knowledge of number of methods							
	None		1 or 2		3 or more		Total	
	No.	%*	No.	%*	No	%*	No.	%†
MALES :								
15-24	14	46.7	5	16.7	11	36 6	30	12.4
25-34	49	53.8	18	19.8	24	26.4	91	37.6
35-44	38	52.1	22	30.1	13	17.8	73	30.4
45 +	23	48.9	13	27.7	11	23.4	47	19.6
All ages	124	51.4	58	24.1	59	24.5	241	100.0
FEMALES :								
15-24	31	62.0	.6	12.0	13	26.0	50	20.7
25-34	58	63.0	15	16.3	19	20.7	92	38.2
35-44	39	72.2	9	16.7	6	11.1	54	22.4
45 +	35	77.8	5	11.1	5	11.1	45	18.7
All ages	163	67.6	35	14.5	43	17.9	241	100.0
Both sexes, all ages	287	59.5	93	19.3	102	21.2	482	100.0

* Row percentages.
† Column percentages

$P <$ 0 01 for males and females of all ages.
$P < 0.01$ for males and females by individual age-groups.

Table 3 further shows that the extent of knowledge of contraceptive methods by sex amongst the illiterate population. Even when literacy/education was controlled, males had more knowledge regarding contraceptives than females.

Type of contraceptive methods

Among those who knew about one or more contraceptive methods (117 males and 78 females), the distribution of knowledge by specific methods is given in Table 4. The total exceeds the number of respondents because several knew of more than one method.

The knowledge of condoms and orals—the two most commonly acknowledged spacing methods is practically non-existent.

There is no significant difference between males and females regarding knowledge of specific methods, that is, men and women

TABLE 2

Knowledge of contraceptive methods among males and females by religion/caste

Religion/Caste	Knowledge of number of methods															
	None				1 or 2				3 or more				Total			
	Males		Females		Males		Females		Males		Females		Males		Females	
	No.	%*	No	%*	No	%*	No	%*	No	%*	No	%*	No.	%†	No.	%†
Upper	18	40.9	26	65.0	8	18.2	4	10.0	18	40.9	10	25.0	44	18.2	40	16.6
Middle	35	53.0	49	73.1	15	22.7		0.5		24.3	11	16.4	66	27.4	67	27.8
Backward	32	60.4	30	65.2	12	22.6	8	17.4	9	17.0	8	17.4	53	22.0	46	19.0
Scheduled	26	49.1	45	70.3	16	30.1	0	15.6	11	20.8	9	14.1	53	22.0	64	26.6
Muslim	13	52.0	13	54.2	7	28.0	6	25.0	5	20.0	5	20.8	25	10.4	24	10.0
All Males	124	51.4	—	—	58	24.1			59	24.5	—	—	241	100.0	—	—
All Females	—	—	163	67.7	—	—	35	14.5	—	—	43	17.8	—	—	241	100.0

* Row percentages.

† Column percentages.

$P>0.01$

TABLE 3

Knowledge of contraceptive methods by education

Educational level	Knowledge of number of methods							
	None		1 or 2		3 or more		Total	
	No.	%*	No.	%*	No.	%*	No.	%†
MALES :								
All Males	124	51.4	58	24.1	59	24.5	241	100.0
Literate	14	50.0	9	32.1	5	17.9	28	11.6
School	15	24.6	10	16.4	36	59.0	61	25.3
Illiterate	95	62.5	39	25.7	18	11.8	152	63.1
FEMALES : **								
Illiterate	158	67.2	33	14.1	44	18.7	235	
All illiterates	253		72		62		387	

* Row percentages.

P< 0 01

† Column percentages.

** Breakdown by level of education was restricted to males only as 96 3% of females were illiterate.

TABLE 4

Knowledge of contraceptive methods among those who know of one or more methods—by Method and Sex

Method	Males		Females		Both sexes	
	No.	%*	No.	%*	No.	%*
Orals	14	4.9	21	9.2	35	6.8
Condoms	22	7.7	20	8.7	42	8.2
IUCD	79	27.8	66	28.8	145	28.3
Tubectomy	72	25.4	55	24.0	127	24.8
Vasectomy	97	34.2	67	29.3	164	31.9
Total	284	100.0	229	100.0	513	100.0

* Column percentages.

p greater than .01

knew equally well about all methods, regardless of whether they were male or female dependent methods.

Use of contraceptives

Of the 482 couples, 16 (3.3%) were using, or had ever used contraceptives. The methods used were: vasectomy 8, tubectomy 3, condoms 1, IUD 3 and orals 1.

Summary

The survey was conducted in 1971, at the start of the Rural Family Planning Project to establish baseline parameters for evaluation and programme planning. For evaluation, demographic and fertility parameters were determined in a sample of 3,000 households. For planning of communication activities a smaller sample (500 households) was used, and the extent of knowledge regarding contraceptive methods, the accuracy of the information and its source were determined.

In this paper only data regarding the extent of knowledge and its salient associated variables are presented. The ensuing discussion attempts to go beyond the presentation of data to their implications for planning communication activities.

It needs to be reiterated, however, that the data is specific for this area and at a certain point of time. Its generalisation for the whole of India will result in the very pitfalls that such limited surveys seek to avoid. Each programme must determine data specific to its own area of operation.

The survey was confined to knowledge regarding contraceptive methods, not attitudes towards family planning. This is because attitudes are difficult to measure and it was felt that the relevance of the findings would not justify the expenditure incurred.

The extent of knowledge was thinly spread especially among women. This cannot be explained only by the higher educational attainment among men. Yet women need to know at least as much as men. Their literacy rates are also lower. Inter-personal communication seems to be the only feasible way to communicate contraceptive related information and extra inputs must be made to do this for rural women.

Knowledge was evenly distributed among all age groups in both sexes. Couples entering the reproductive age groups are as ignorant of contraceptives as their earlier cohorts, and will, presumably contribute equally to high fertility. Programmes are needed for the younger age groups especially for the reversibles. Sports programmes for young women, and sewing and child care classes for young mothers are examples of such programmes devised by RFPP.

There was no significant difference in the extent of knowledge amongst various Hindu castes, and amongst Hindus and Muslims—the two religious groups in this area. This is contrary to fears, expressed and unexpressed. If there is difference in the acceptance rates other factors must be looked for.

Education, as can be expected, is a major determinant. A relatively minor input is needed for the use of printed media. As pointed earlier, expensive and time consuming inter-personal contacts seem to be the only way of reaching the vast masses of illiterate people for contraceptive information (as distinct from persuasive information). Programmes must do this in a systematic and planned way, provide for complete coverage rather than force its field staff to recruit acceptors and thus flit from one potential acceptor to another.

Finally, and to reiterate a point made earlier, the knowledge of specific methods was not evenly spread for all the methods. Knowledge of condoms and orals (the latter not fully a part of the GOI programme) was insignificant and yet, these are the most recommended methods for spacing, most suited to the younger age groups.

If the guiding dictum is "Educated choice amongst all contraceptive methods" it must be reflected in the communication activities and impact. Communication activities, especially with regard to contraceptive information need to be planned on the basis of data and periodically evaluated for each programme cycle. Such an evaluation is within the scope and resources of limited area projects.

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THE LOOP COMES TO SHANTIPUR, NEPAL : A PERSONAL VIEW

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and
DR. ROBERT A. MILLER
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Introduction

Anthropologists have traditionally displayed interest in sexual habits and customs, but as of yet there have been only a few applied contributions to population control programmes. At the same time, anthropological research techniques, characterised by a resident scholar who participates in the life of the people, and who develops close associations and rapport with relatively few respondents, would seem to offer an obvious potential contribution to fertility and family planning studies.

During the past fifteen years an overwhelming majority of the research conducted in the field of population studies has relied almost entirely on the use of sociological research methods, typified by the use of standardised questionnaires and survey research analysis. For example, more than four hundred studies of knowledge, attitudes and practice of contraception (KAP) have been conducted throughout the world utilising these techniques. Although these studies have been useful in gaining governmental support for national programmes[1], concern has been expressed over the validity and lack of depth of such research.

The present exploratory study utilises the "focussed", "in-depth", or "clinical" interview procedures to examine fertility and family planning related factors of a single individual in a small town in Nepal. This method is similar to the analysis of "insight stimulating examples"[2].

Kroeber,[3] commenting on the use of small samples for in-depth case studies, has some favourable points to make, along with a warning :

> "A half dozen case histories of marriages are much more interesting, especially if the personalities are seized and rendered with spirit—why he married Joan and not Marjorie, and why then and not a couple of

> years before. Such anecdotes not only are vivid; they can also be extremely illuminating, like most gossip by intelligent people. But they are obviously not going to be very informative scientifically unless one compiles a great many cases and generalizes them."

The objectives of this study are to focus on the illuminating or hypothesis generating aspects of the material, rather than to attempt to come to generalisations about the cultural pattern. More specifically the objectives are:

1. To explore the potential contributions of anthropological field research techniques to population studies.
2. To gain insight into the background factors affecting one man's decision to adopt a modern method of birth control.
3. To generate hypotheses from a review of an individual's experiences which may deserve further investigation.

After providing the background on the research procedures, the fertility and family planning related biography will be presented. This will be followed by the analysis section which will include a listing and discussion of the various hypotheses generated by the study with relevance to factors affecting fertility, the adoption of a modern method of contraception, and the delivery of programme services.

Methodology

The process of building rapport with the respondent was essential and perhaps the most important step in the entire study. The groundwork for establishing rapport between the interviewer and respondent took place over a six-month period, prior to the beginning of the actual interviews. Originally the interviewer had come to the village as a volunteer community development worker. During the six-month period prior to the interviews, the interviewer spent virtually every day working with the respondent and gradually a close personal relationship developed between them. It seems largely a result of this friendship that the respondent was willing to divulge very personal aspects of his fertility history to the interviewer.

All interviews were conducted in the privacy of the researcher's home. Discussions could not begin until all the doors and windows were closed and the neighbour's small children, who often visited the house, were chased away. The interviews were conducted on twelve separate occasions, averaging about two hours per session.

During the first few interviews the respondent gave short, sketchy answers to most questions, especially those relating to the more personal aspects of his married life. However, gradually in the latter sessions, the respondent began to give more in-depth answers and more personal data. For example, in the earlier interviews, when the respondent was asked if he had ever experienced any pre-marital sexual relations, he responded negatively, but in later interviews he explained that he had had sexual relations with his future wife and that her resulting pregnancy was one of the factors which motivated their marriage.

At the end of each interview*, after the respondent had left, the interviewer and his assistant discussed the data that they had obtained. They compared notes and wrote up questions on points that needed to be clarified at the next session. Often the same questions, especially those on very personal subjects, were asked again in different ways, three or four times, in order to obtain a more accurate picture.

All of the following materials reflect the respondent's own viewpoint and biases. The respondent's relationship with his wife, for example, was based entirely on *his* perceptions and does not take into consideration his wife's views.

Background

Shantipur** is a small, multi-ethnic village in the Kathmandu Valley. A survey of the ethnic groups living in Shantipur Panchayat[4] revealed that 40 per cent are Brahmin and Chhetri, 43 per cent are Tamang, 11 per cent are Newar, and 6 per cent are Tibetan and Sherpa.*** Most of the Brahmins and Chhetris are either small-land-owning farmers or low level government servants. The Tamangs are a Buddhist tribal group, and for the most part are small land owners and tenant farmers. Most Newar families in the village are upper caste Hindus and Buddhists and they derive substantial incomes from shopkeeping and metalworking, The Tibetan and Sherpa residents of Shantipur have small businesses or are skilled craftsmen.

Generally, all ethnic groups in the village tend towards endogamy in their social relations. It has only been in the last ten to fifteen years that a Tamang man would come to a Newar tea shop, or a Brahmin would enter a Newar house. Even today marriages that cross ethnic lines are virtually unheard of ; yet compared to a traditional Hindu village in India, there is a great deal of freedom regarding inter-group relationships.

---

* All interviews were conducted in Hindi, a language known by both the respondent and interviewer.

** The names of both the village and the respondents are fictitious

*** In the fourteenth century, King Jayastithi Malla organised the ethnic groups of the Kathmandu Valley into a vertical social hierarchy based on the Hindu caste system. Later, in 1967 the Gorkha Raj enraged the system to include almost every ethnic group in Nepal. Thus, the Newari Buddhists, as well as a number of Buddhist/Shaminist Mongoloid tribes found themselves incorporated into the Hindu caste system, (*Nepali*, pp. 146-149).

Fertility and family planning related biography

Early life experiences

Raj Lal Sakya was born in Shantipur in 1926. Raj Lal's family was Buddhist Newar, of the Sakya caste, which has the traditional occupation of goldsmith and maker of religious objects. The Sakya caste is one of the highest in the Buddhist Newar vertical social hierarchy, and his family possessed high social status in the village. In Raj's family there were eleven children, eight girls and three boys, but four of his brothers and sisters died in their childhood. Raj Lal was the oldest son and eighth child in his family, and at the age of six he started attending a private primary school in the village. He continued to study there for three years, after which his parents sent him to a Brahmin teacher to study Nepali, the national language of Nepal, and arithmetic for two years.

The large size of his family made it difficult for him to find a place to be alone and think in quiet, and there was often arguing and quarrelling in the house. His father began to drink heavily when Raj was only six years old, and as he grew up he watched his father squander the family fortune which his great grandfather had acquired as a trader in Lhasa.* Raj Lal's father taught his son some goldsmithing, and at the age of twelve Raj was sent to Western Nepal to study to be a goldsmith under his uncle's supervision. Raj stayed there for eighteen months, but missed his home and family and returned to Shantipur. By this time it had become clear to Raj's father, and to Raj himself, that he was not cut out to be a goldsmith.

Raj asked his father if he could follow his great-grandfather's vocation, and go on a trading journey to Lhasa with some other Newar traders. Thus, at age fourteen Raj left the Kathmandu Valley for Lhasa where he lived with Newar friends for eighteen months. He returned to his family's house, stayed for six months and left again for Tibet via Kalimpong, the starting point on the major trade route between India and Lhasa. This time, he spent only nine months in Lhasa and returned to Kalimpong where he stayed with a group of friends. While in Kalimpong he heard that his father was now drinking from morning till night and had ceased taking an interest in the family's affairs. Raj wanted to help his family out of its financial troubles and make it economically prosperous, as it had been before his father's lavish spending.

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* During the late 1930's, 40's and 50's the Newar trading community in Lhasa totalled well over a thousand. Almost all of this group, were, like Raj, high caste Buddhists from the Kathmandu Valley. Most of the trade involved exporting musk and yak tails from Tibet and importing luxury goods from Calcutta.

While in Kalimpong, Raj started working on an order and commission basis, taking orders from Calcutta businessmen for Tibetan goods and receiving commissions upon their delivery. His business began to flourish and he started sending money home to his family in Shantipur.

Courtship and marriage

After living in Kalimpong for four years Raj met a young Newar girl, of his caste, who was studying and working in an industrial school near his house. They started meeting on the street when she was walking home from the school. They would walk around the city and talk, and occasionally go to a movie together.* They soon fell in love and started talking of the possibility of marriage. Raj's fiancee would often ask him if he would leave her and he would repeatedly reassure her. After seeing each other for six months they began having sexual relations. One day Raj's fiancee informed him that she was sure that she was pregnant. At this point they decided that they must marry. Raj brought her to his room and kept her there secretly for three days. On the morning of the fourth day Raj sent his friend's wife to the house of his fiancee's parents to tell them that their daughter was safe with Raj and that both of them would come to the parents' house. That evening they went to his fiancee's parents' house and brought them some sweets and talked to them about the marriage. The parents of the girl agreed to the marriage and gave the couple their blessings. They were married the next day.** The ceremony was simple and conducted in a few hours, and the total financial outlay for Raj was only Rs. 80 (U.S. $10). This type of marriage procedure is the most common exception to the traditional form in Newar society. It is called marriage by elopement and usually occurs when some factors prohibit the usual marriage formalities, such as a lack of money, lack of consent of one of the families involved, or the pregnancy of the future bride.[5]

As Raj's parents had no prior knowledge of their son's plans, they were not present at the marriage. However, Raj informed them soon after the marriage. At the time of the marriage Raj was twenty years old and his wife was sixteen. His wife had completed her primary education through the fifth standard and could read and write Nepali.

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* It should be noted that, for 1946, Raj showed considerable freedom in courting his fiancee. Two factors seemed to have affected his actions : first, he was living away from his joint family, and secondly Kalimpong's Nepalese community is reported to be less rigid regarding restrictions on interpersonal relationships, than Nepalese societies as a whole.

** Usually, the arrangements for a traditional Newar marriage take place over a period of four to six months.

Early years of marriage

Raj brought his pregnant wife back to Shantipur after she had stayed with her parents for seven months. Raj's mother was upset over his marriage, as she had already selected a girl for him to marry. As an indication of her displeasure his mother claimed that his wife was not a pure Sakya Newar and she could not eat rice that had been cooked by her daughter-in-law.* However, everyone else in Raj's family accepted his wife and was quite pleased with her. Soon after arriving in Shantipur she gave birth to their first child, a girl.

Ideal family size

Raj and his wife had never talked of the number of children they wanted. Raj himself had never really conceived of any fixed number of children being better than another ; however. he did know that he wanted a few sons. Raj had personally seen the problems caused by a large family while a child, and was certainly influenced by this experience. Yet, he also believed that it was God that gave children and took them away, and the final decision was His.

Husband-wife communications

Although the events leading up to Raj's marriage were somewhat typical, Raj's relationship with his wife was traditional. She viewed her husband as a superior being.** She never referred to him or called him by name after their marriage. Even today after over 25 years of marriage she refers to him as the father of one of their children. They have always maintained a certain social distance that is traditionally required of Newari husbands and wives. Raj does not discuss his personal or business problems with her. Their conversation is centred around domestic issues, such as care of the children, the type of food for the next meal, the high price of food, good and bad children in the neighbourhood, problems of their neighbours, etc. Furthermore, Raj always initiates such conversations, and they often involve his giving instructions to his wife concerning what he wants for dinner, that the house is dirty and she should clean it, or that if any friends come by to tell them that he will be back at such and such a time. Raj and his wife do not talk about sexual matters and related subjects, as they feel that such discussions are taboo for husbands and wives. However, Raj believes that many younger husbands and wives talk more freely with one another these days.

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* In traditional Newar society only joint family members can eat boiled rice cooked in the household. Thus, Raj's mother's refusal to eat the rice cooked by her son's wife indicated that she did not accept her as a joint family member (*Nepali*, p. 149).

** *Nepali* states that such relationships are traditional in Newar society (*Nepali*, p. 269). However, it seems probable that Nepali also relied largely on male respondents.

Continued growth of the family and motivating factors to limit family size

About two months after the birth of their first child Raj and his wife returned to Kalimpong. Raj continued to run his profitable trading business and eighteen months after their return his wife had a second child, this time a son. While living in Kalimpong, Raj's wife would periodically go to her parent's house to stay for a few days. In Kalimpong they had their third child, a girl. At this point Raj began to think that his family size was about right and that more children might prove an economic burden on the family. He felt that if they could stop having children, he and his wife would have time to go to the movies, have picnics, and talk to their friends, as they did before their first child. As long as they had young children, it took all their time to look after them.

Early attempt to limit family size

Raj had purchased a book a number of years before on one of his trading missions to Calcutta, in which some methods of limiting family size were described. The book was an old Sanskrit text called the *Kok Shastra*, which had been translated into Hindi. One method stated that by abstaining from sex during the week leading up to menstruation, during menstruation and the week following menstruation, one could reduce pregnancies by fifty per cent.* It said that the *patheghar* (baby's house) opened a week before menstruation started and remained open through menses and closed a week after menstruation ended. While the *patheghar* was open pregnancy could occur. This explanation seemed reasonable to Raj and so he decided to try the method. Raj found it difficult to abstain from sexual relations for three weeks out of four, but he was determined to control his rapidly growing family. In 1951, when he and his wife began this method, there was little other information available on other contraceptive methods. At this time the family moved back to Shantipur to take up permanent residence.

Traditional cultural fertility-reducing factors

Raj and his wife had followed the traditional Newari times when restrictions on sexual relations between husband and wife were required, from the time of their marriage. These included the four days when the wife was menstruating, the two months following the birth of a child, and any time when the husband and wife were fasting for religious reasons. However, even though they observed the traditional taboo periods and were practising the "abstinence method" as described in the *Kok Shastra,* Raj's wife became pregnant only a year after the birth of their third child. This came as quite a surprise to Raj and his wife, but they thought that perhaps their efforts had lengthened the gap between their pregnancies.

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* This method which actually limits sexual intercourse to the week when ovulation occurs, would tend to *increase* the likelihood of conception.

The development of Raj's social and economic status in the village

At about this time Raj's mother died, and Raj's wife became the senior woman in the household. Raj's younger brother had recently married and had brought his wife into the Sakya household in Shantipur. The house was now inhabited only by his father and Raj's and his brother's families, since all sisters had married and were living with their husbands' families in other villages in the Kathmandu Valley. Raj's brother had taken over the goldsmith shop previously run by their father. The father spent most of his time in his room drinking and had lost all interest in the family's affairs. Raj had found that there were a number of Japanese and German chemical firms interested in buying certain *ayurvedic* substances obtainable in the Himalayas and started working as a free-lance middleman. His family had once again attained its status as one of the wealthier families in the village, and they were now free of economic problems. However, in his spare time he would go to the family garden and spend hours weeding, planting and irrigating his vegetables, as he continues to do up to this day.

Raj's later fertility history

Two years after the birth of their fourth child, in 1943, Raj's wife gave birth to their fifth. Raj, at this point became somewhat frustrated with his attempt to control his family's growth. He had followed the "abstinence method" quite carefully for four years yet the babies continued to come. However, he felt he had no choice but to continue with it, as no alternative was available. It was at this time that Raj met a young midwife who was working in Shantipur. Raj began having sexual relations with her and maintained her as his "kept wife" for three years. When she began to drink considerably and have sexual relations with other men, he broke off the relationship.

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* Nepali states that "many rich Newars in the Valley are found keeping concubines" (*Nepali*, p. 237).

They tried to keep their affair a secret, and succeeded as far as he knows.

About the time Raj's affair ended his wife gave birth to their sixth child and two years following, a seventh child was born, both girls. Raj became severely disillusioned with the *Kok Shastra* method, but he still had not heard of any alternative methods of contraception. Also, Raj was 34 years old and had noted a significant drop in his sexual desires, so it was somewhat easier to continue with the method. Five years after the birth of their seventh child, Raj's wife became pregnant for the eighth time. Raj decided that his wife should deliver this child in the hospital, as she was getting older and weaker.

Throughout Raj's fertility history he never considered the use of induced abortion, as he felt it to be the equivalent of murder. He said that it was used only by people in desperate situations, such as Brahmin widows who became pregnant.

Adoption of the Intra-Uterine Device (IUD)

When Raj's wife's pregnancy neared the time of delivery she went to the hospital. While there, the nurses and doctors inquired about how many children she had, and she stated that this would be her eighth. They told her that a new contraceptive method had just become available in Nepal to help women stop having babies. They explained the new method to her, the IUD, and after the delivery she went home and told Raj about it. It was exactly what he had wanted to hear for a number of years, and he told her that she should go and have it inserted in six months, as they had recommended. Raj's wife went at the appointed time and had the loop inserted.

Side-effects from the IUD

At the time of insertion the doctor told her that she might have some heavier menstrual bleeding, and if this happened to come back to the hospital and get some medicine. Just as the doctor had said, she bled very heavily that month and was quite worried, but she went to the hospital and got the medicine and it seemed to help. The following month, again her bleeding was excessively heavy and she had to take the medicine again. Since the insertion of the loop in 1966 her menstrual period has increased from two to three days to four to six days, but she has not taken the medicine since the first two months. As the time of her bleeding increased, she could no longer afford to follow the taboos against cooking during menstruation. However, during menstruation she cannot perform the daily prayers to the family deity and is not allowed to touch young plants or trees bearing fruit, since it is believed that the increased "heat" from her hands will kill the young plants and fruits.

Effects of the acceptance of the Loop on Raj's family and friends

Generally, Raj's wife worries little about the loop nowadays and is quite happy with it. She talked to Raj's younger brother's wife about it, after their fifth child, and persuaded her to have one inserted. Raj and his wife have told all of their older children to have no more than two children. They have convinced their eldest daughter, who is married with one child, to take the pill for some time in order to space the birth of her second, and they hope, last child. Raj is quite proud that his wife was the first woman in Shantipur to have a loop inserted, and he still feels that this is the best of all methods.

He occasionally talks to his old mistress, the midwife. She told him that many women are now coming to her for information about family planning methods and that she had influenced over 35 women in Shantipur to accept the loop. Women from all the ethnic groups in the area, including Brahmin and Chhetris, Tamangs, Newars, Sherpas and Tibetans, have come to her for information. Raj also told a number of his friends, in private, who have come to him and asked about family planning methods. However, even today in Shantipur, the specifics of family planning are taboo topics for public conversation, as are all things related to sexual matters. Women will only talk about such things to their closest friends, in private. Men rarely talk to anyone about methods that they use, although the general concepts of family planning are not considered so confidential.

Raj's recent experiences with family planning programmes and methods

Some years ago the government started a one-week training course for newly elected village headmen. Part of the course dealt with family planning programmes and methods. Some time later they sent all of the men involved in the course a supply of condoms for distribution in their villages. Raj had heard of the condom a few years ago, but had thought that it was used only by "rogues and scoundrels" who visited prostitutes, and by young men who tried to corrupt young virgin girls. Since the arrival of the condoms, he had heard that few men in Shantipur had requested any, and he decided to try one out in order to gain a better knowledge of the method, even though his wife had already adopted the loop and was protected. He found that it greatly decreased the satisfaction and pleasure that he usually achieved from sexual intercourse. Today he does not recommend the condom and feels that it is not used by "good families."

Raj has taken considerable interest in helping a family planning organisation that is trying to get a programme started in Shantipur. Recently, a small vasectomy clinic was held in the village and female nurses assisted in the operations. Raj reported that he had heard some years before that young girls shaved the scrotum of men having the sterilisation operation. He felt that this was not good and was keeping many men from having the operation, as they feared that while being shaved they would get an erection and the nurse would abuse them.

Discussion and hypotheses generated by biographical data

In the following section we will examine some of the factors that arose in Raj's life story which appear to be related either to the fertility of his family, the adoption of contraceptives or the delivery of family planning services. An attempt will be made to synthesize them into a series of hypotheses that may deserve further investigation. Although every hypothesis may not be stated in formal terms, the material which follows is in no way envisioned as a series of generalised rules, or even definite programme suggestions. The following discussion only attempts to suggest some areas for possible investigation in the future.

1. *The concept of ideal family size—Its retrospective development*

It was only at a later stage in Raj's married life that he developed the concept of an "ideal family size". As a youth he knew that he wanted to have some sons and was aware of some of the problems created by large families as a result of his own personal experiences. However, at that time Raj possessed virtually no knowledge of human reproductive biology or of contraceptive methods, and he was well aware of the reality of infant mortality. Thus, for Raj, it would have been pointless to set a goal for a specific number of children. It was only after Raj had had three children and had experienced the problems and inconveniences which growing families can create, that he came to the conclusion that trying to limit his family size would be preferable to letting it grow unchecked.

It seems probable that in many societies where no effective means of family limitation are available or acceptable, individuals may develop a conception of an "ideal family size", slowly in the latter stages of their reproductive lives. For example, when Raj had three children he thought them enough, when he had six he knew things were getting out of hand and by the time he had eight his concept of an "ideal family size" was fully developed—Two! This process may in part explain why existing family size is often greater than ideal family size. Also, because of this retrospective development, ideal family size cannot serve as a goal for one's own childbearing, though it may be communicated to the next generation.

2. *The importance of the joint family system for family planning programmes*

The joint family system is usually thought to be structurally supportive of high fertility, although some debate exists in the literature on this point.[6] One might assume that the older joint family heads, with more traditional values, would encourage their family to have many sons and discourage them from trying to limit their family size. However, when Raj became the joint family head, he did the opposite. Having experienced the problems of a large family, he informed his children and relatives of the value of having only two children. He recommended that his brother's family adopt the loop and that his married daughter take the pill after only one child, in order to space her next child. Thus, we find Raj and his wife passing on their experience with the problems of large families, and their positive attitudes towards family limitation and contraceptive use, to other members of their joint family.

If this behaviour pattern is found on a larger scale, it may be that in societies where extended family units and joint family dwelling arrangements occur, heads of families may be important educational targets. The head of the family may play the same roles for his family that community leaders are usually believed to play for the whole community. Since communication on sex related matters between community leaders and the community members may be stiffled due to existing social norms, the family leaders may be an especially important educational target group.

3. *The implications of cultural taboos or restrictions of the discussion of topics related to sex and contraceptives*

In Shantipur, contraceptive methods and an individual's experiences with them are not considered acceptable topics for general discussion. Raj reported that such matters can only be discussed in private by two friends of the same sex, and to some extent by husbands and wives. If such cultural taboos on the topic of contraception are widespread in Nepal, it may be that written texts on the subject would be effective in influencing literate persons who need private channels of communication, especially in areas where family planning programmes are just beginning. It is interesting that Raj, who only studied up to the third standard of a primary school, received his information on the traditional "abstinence" method from a book, the *Kok Shastra.* Also, the introduction of family life education in the school system might help to break down communication taboos on the topic.

4. *Programme factors and the delivery of family planning services*

Raj's wife finally learned about the loop at the hospital in association with a delivery. She was provided with a warning on the possibility of its side-effects. When the side-effects did occur, she was very worried, but she was relieved after visiting the hospital and receiving medical treatment and reassurance. Even five years after insertion, the side effects have not disappeared, yet today, Raj's wife is apparently confident about the value and benefits of her IUD. The experience suggests that warning acceptors of side-effects, reassuring them, and following them up may be associated with higher loop retention rates.

The recent experience at the vasectomy camp at Gautampur, where female workers were used in preparing men for the operation, suggests that the use of female medical workers may be a deterrent for potential vasectomy clients.

Conclusion

The examination of an individual's experiences with fertility and contraceptives was used to generate several hypotheses that may deserve further investigation. Closer examination of such data could prove even more fruitful. For example, there are implications regarding early childhood experiences, formal education, information and education programmes, infant mortality, attitude change, interspouse communication, and other areas which are frequently discussed in the literature. Also, this type of study tends to unify such fertility related factors and allows their inter-relationships to be identified. The technique used in the study appeared to be successful in obtaining very personal and revealing information, which probably could not have been gathered with the use of survey research methods.

There appears to be a need for a more comprehensive understanding of the values, needs and life experiences of individuals in specific cultures, than results from the more usual studies which rely exclusively on survey research methods. Anthropologists and cultural psychologists are in a position to gain such understanding which might contribute considerably towards solving the problem of rapid population growth.

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THE RELATIONSHIP BETWEEN THE LEVEL OF DEVELOPMENT AND FAMILY PLANNING PERFORMANCE IN INDIA

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With its 1971 Census reporting a population of 547 million[1], India ranks second to China among the countries of the world in total population. With an annual rate of growth of 2.4 per cent, the people of India account for about 15 per cent of the world's population, while occupying only 2.4 per cent of the world's land area. India's population problem has become critical in recent years. It arises primarily out of an extremely high fertility rate accompanied by a declining mortality rate. Modern medical and health practices have been successfully introduced into India with a resultant sharp decline in the mortality rate, and increase in the average expectation of life. The problem is compounded by the fact that there has been, as yet, no corresponding decline in the fertility rate. The inevitable result has been an increasing pressure of population on land. The enormous pressure of population seriously threatens the economic and social development of the country. The existing programmes in agriculture, education, housing, employment, health services, rural and urban development are simply not adequate to cope with the rapid population growth. Moreover, the per capita income in India is one of the lowest in the world, in spite of rising national income.

The Government of India has been aware of the population problem ever since the country attained its independence in 1947, and has the distinction of being the first country in the world to have recognised the importance of the population problem and to have adopted a national population policy of fertility control as an integral part of its national developmental plan.

The official recognition of the problem came with the publication of the first Five-Year Plan, which went into effect in 1951. It emphasised that the objective of stabilising the growth of population over a reasonable period of time must be at the very centre of all planned development. Under such circumstances as prevail in India, the stress must be placed on the promotion of family planning for the economic and social development of the country[2]. The Government of India initiated the family planning programme as a matter of official policy. Since implementing the programme, three Five-Year Plans have already been completed and the fourth is underway. But, unfortunately, the family planning programme has not met with the success expected. The mortality rate has declined considerably, but the fertility rate has not shown a similar decline.

The initial problem faced by the Government of India is promoting family planning on a nation-wide basis, which is usually associated with a high standard of living. It appears that when people are accustomed to a high standard of living, they are inclined to limit family size in order to maintain this standard of living. But, in case of India, the standard of living is very low, and consequently the country faces a dilemma. Whereas population control is critically needed to check the decline in the already low standard of living, the successful practice of family limitation may require a high standard of living than is now the case[3]. Thus, we focus the central problem of this study, namely, to discover the character of the relationship between the level of development and family planning performance in India.

General design

To meet the research objective, the design must permit the concepts to be defined and the data to be gathered that will subsequently answer the above objective. The two main concepts used in this study are the level of development, and the family planning performance.

By level of development, we mean variables of socio-economic development in the various states of India, namely, per capita income, the percentage of urban population, the percentage of literate population, the percentage of non-agricultural workers, the percentage of female workers and the percentage of literate females. Table 1 gives the level of development of India, by states. By family planning performance, we mean the achievement in family planning variables in various states of India, namely, number of sterilisations, the number of IUD insertions, the number of conventional contraceptive users and the expenditure of the family planning budget.

For convenience, the family planning performance variables have been expressed in rates for couples in the reproductive ages. The currently married women (1971) in the age group 15-44 are considered reproductive. The following definitions have been used in computing the family planning performance rates:

1. Sterilisation rate—Defined as the number of sterilisations (1965-71) per 100 couples in the reproductive age group 15-44.

TABLE 1

Level of development of India, by states

State	Per capita income (in rupees)	Percentage of urban population	Percentage of literate population	Percentage of non-agricultural workers	Percentage of female workers	Percentage of literate females
Andhra Pradesh	458 (6)	19.35 (7)	24.56 (11)	30.37 (11)	25.24 (11)	15.65 (9)
Assam	394 (9)	8.39 (15)	28.81 (8)	34.24 (9)	6.15 (12)	18.91 (8)
Bihar	292 (15)	10.04 (14)	19.79 (14)	19.60 (16)	10.58 (8)	8.49 (15)
Gujarat	523 (3)	28.13 (3)	35.72 (4)	34.93 (6)	10.65 (7)	24.56 (5)
Haryana	504 (4)	17.78 (9)	26.69 (9)	34.49 (8)	3.17 (15)	14.68 (10)
Jammu & Kashmir	341 (14)	18.26 (8)	18.30 (16)	32.87 (10)	4.86 (14)	9.10 (14)
Kerala	291 (16)	16.28 (11)	60.16 (1)	51.37 (1)	13.68 (6)	53.90 (1)
Madhya Pradesh	378 (10)	16.26 (12)	22.12 (12)	21.56 (15)	19.77 (3)	10.84 (12)
Maharashtra	529 (2)	31.20 (1)	39.08 (3)	35.93 (5)	21.49 (2)	25.97 (3)
Mysore	441 (7)	24.31 (5)	31.54 (7)	34.54 (7)	15.13 (5)	20.76 (7)
Orissa	368 (12)	8.27 (16)	26.12 (10)	23.70 (14)	7.58 (11)	13.75 (11)
Punjab	619 (1)	23.80 (6)	33.39 (5)	37.22 (4)	1.67 (16)	25.75 (4)
Rajasthan	365 (13)	17.61 (10)	18.79 (15)	27.31 (12)	10.42 (9)	8.26 (16)
Tamil Nadu	436 (8)	30.28 (2)	39.39 (2)	39.90 (3)	16.96 (4)	26.83 (2)
Uttar Pradesh	374 (11)	14.00 (13)	21.64 (13)	24.66 (13)	8.78 (10)	10.18 (13)
West Bengal	495 (5)	24.59 (4)	33.05 (6)	42.50 (2)	5.36 (13)	22.08 (6)
Mean	425.50	19.28	29.95	32.82	11.34	19.29
Standard Deviation	88.73	7.04	10.28	7.97	6.64	10.82

Sources **:** Per capita income, 1964-65, is obtained from India, *Reserve Bank of India Bulletin* (New Delhi · Government of India, 1969), September, and India, Central Statistical Organisation, *Lok Sabha Unstarred Question No 3549* (New Delhi : Government of India,1971), June 30.

Percentage of urban population 1971, percentage of literate population 1971, percentage of non-agricultural workers 1971, percentage of female workers 1971 and percentage of literate females 1971 are obtained from India, Registrar-General and Census Commissioner, *Census of India : 1971* (New Delhi : Government of India, 1971), Series 1, Paper 1, p 5, 1, pp. 30-32, 77-79 and 85-158 respectively.

Note **:** Numbers in parentheses indicate the ranks of the respective values

2. IUD insertion rate—Defined as the number of IUD insertions (1965-71) per 100 couples in the reproductive age group 15-44.

3. Conventional contraceptive user rate—Defined as the number of conventional contraceptive users (1970-71) per 100 couples in the reproductive age group 15-44.

4. Budget expenditure rate—Defined as the amount of budget expended for family planning (1966-71) per couple in the reproductive age group 15-44.

Table 2 gives the family planning performance rates in India, by states. These rates allow for the differences in the couple population size and give a more accurate picture of the differential family planning performance in the various states of India.

TABLE 2

Family planning performance rates in India, by states

State	Sterilisation rate	IUD insertion rate	Conventional contraceptive user rate	Budget expenditure rate
Andhra Pradesh	11.07 (5)	2 09 (16)	1.37 (6)	16.10 (7)
Assam	2.58 (16)	5 81 (4)	0.38 (16)	6.09 (16)
Bihar	4.10 (13)	2.13 (15)	1.91 (11)	6.52 (15)
Gujarat	7.28 (9)	3.91 (9)	1.67 (4)	18.09 (5)
Haryana	5.44 (11)	15.41 (2)	2.94 (2)	20.02 (3)
Jammu & Kashmir	4.92 (12)	5 75 (5)	0.59 (15)	13.86 (10)
Kerala	11 52 (3)	7.43 (3)	0 78 (14)	27 34 (1)
Madhya Pradash	5 77 (10)	2 18 (14)	0 96 (9)	11.55 (12)
Maharashtra	13.36 (1)	3.65 (10)	2 04 (3)	16.38 (6)
Mysore	7.47 (8)	5.06 (7)	0.97 (8)	14.10 (9)
Orissa	12 00 (2)	5.41 (6)	1.40 (5)	18.32 (4)
Punjab	9.49 (6)	19.97 (1)	4.06 (1)	23.12 (2)
Rajasthan	3.44 (15)	2.61 (12)	0.95 (10)	14.61 (8)
Tamil Nadu	11.28 (4)	2.34 (13)	0.98 (7)	12.38 (11)
Uttar Pradesh	3.91 (14)	3.61 (11)	0.87 (2)	10 61 (14)
West Bengal	8.17 (7)	4.18 (8)	0.83 (13)	10.76 (13)
Mean	7.61	5.72	1.35	14.99
Standard Deviation	3.36	4.84	0.92	5.46

Sources : Number of sterilisations 1965-71 is obtained from India, Ministry of Health and Family Planning, *Family Planning in India, Programme Information : 1970-71* (New Delhi : Government of India 1971), pp. 18-19

Number of conventional contraceptive users 1970-71 is obtained from India, Ministry of Health and Family Planning, *Family Planning Quarterly* (New Delhi : Government of India, 1971).

Number of IUD insertions 1965-71 and budget expended 1966-71 are obtained from India, Ministry of Health and Family Planning, *Progress of Family Planning Programme in India* (New Delhi : Government of India, 1972), p 22 and p. 59 respectively.

Note : Numbers in parentheses indicate the ranks of the respective values

Out of the total of eighteen states of India, sixteen have been selected for the study. This is because of the systematic availability of the data, particularly with respect to family planning performance. The data for the research purpose have been obtained from the various publications of the Government of India.

In this study an attempt is made to devise a composite measure of the "total acceptance rate" of contraceptive methods. It is obtained by summing the sterilisation rate, the IUD insertion rate and the conventional contraceptive user rate. Thus, the total acceptance rate refers to the total acceptors of contraceptive methods per 100 couples in the reproductive age group 15-44. Table 3 gives the total acceptance rate of contraceptive methods in India, by states.

TABLE 3

Total acceptance rates of contraceptive methods in India, by states

State	Total acceptance rate
Andhra Pradesh	14.53
Assam	8.77
Bihar	7.14
Gujarat	12.86
Haryana	23.79
Jammu & Kashmir	11.26
Kerala	19.73
Madhya Pradesh	8.91
Maharashtra	19.05
Mysore	13.50
Orissa	18.81
Punjab	33.52
Rajasthan	7.00
Tamil Nadu	14.60
Uttar Pradesh	8.39
West Bengal	13.18
Mean	14.69
Standard Deviation	6.81

Note : Total acceptance rate is obtained by summing up the sterilisation rate, the IUD insertion rate and the conventional contraceptive user rate as shown in Table 2.

In this study an attempt has also been made to devise a composite measure of the "level of development", and the composite measure of "family planning performance", which are obtained by the following method :

1. Measure of level of development—All the states of India are ranked with respect to each development variable; that is, ranked within each variable. Thus, each state has a rank for each variable as shown in Table 1. The sum of the ranks for the six variables is the composite measure of that state, which has been designated as the "level of development". This measure is shown in Table 4.

TABLE 4

Composite measures of the level of development and family planning performance in India, by states

State	Level of development	Family planning performance
Andhra Pradesh	45	34
Assam	61	52
Bihar	82	54
Gujarat	28	27
Harayana	55	18
Jammu & Kashmir	76	42
Kerala	38	21
Madhya Pradesh	64	45
Maharashtra	16	20
Mysore	38	32
Orissa	74	17
Punjab	36	10
Rajasthan	75	45
Tamil Nadu	21	35
Uttar Pradesh	73	51
West Bengal	36	41

Note: The composite measure of the level of development is obtained by summing up the ranks of the six variables of the level of development. The rankings are shown in parentheses in Table 1.

The composite measure of the family planning performance is obtained by summing up the ranks of the four variables of family planning performance. The rankings are shown in Table 2.

2. Measure of family planning performance—All the states of India are ranked with respect to each family planning performance variable; that is, ranked within each variable as shown in Table 2. The sum of the ranks for the four variables is the composite measure of that state, which has been designated as the "family planning performance". This measure is shown in Table 4.

The research tests the degree of association between: (1) the variables of the level of development and family planning performance rates, (2) the variables of the level of development and the total acceptance rate, and (3) the composite measure of the "level of development" and the composite measure of "family planning performance".

Hypotheses

The perspective of this research is viewed essentially from the framework of one of the most contemporary theories of fertility control. It emphasises a new kind of population stability that has been reached in the "developed" countries of the world—Western Europe, the United States and most recently, Japan—through the stages of demographic evolution by technological modernisation. This theory has been called in the literature of demography as the "Theory of Demographic Transition".

This framework has been predominant in recent years, set forth by Thompson[4], Notestein[5], Davis[6], and others. Briefly described, this theory seeks to explain the sequence of events in the world's changing population during the last three hundred years, and the changes which have taken place in the population from initially high mortality and fertility rates to low mortality and fertility rates, thus bringing stability in population.

The demographic transition in Europe, and later elsewhere, in the past two centuries was largely the result of economic and social development. In the wake of this development came the rapid decline in mortality. With more children surviving, fewer births were needed to achieve a given family size, or rate of population increase. The rising cost of living and diminished economic utility of children in urban and industrial environments provided additional motivation for family limitation. Raising the status of women through the extension of educational opportunities and employment of women in occupations formerly reserved for males contributed to the widening of the practice of family limitation. Finally along with industrialisation and modernisation, came the development of a more secular, rational attitude which favoured the voluntary control of fertility[7].

The preceding discussion forms the central orientation of this study. It has been designed within the framework of the Theory of Demographic Transition. According to this theory, fertility decline takes place only after the occurrence of economic development, industrialisation and urbanisation. The underlying assumption is that, as the standard of living increases, the practice of family planning expands, thus bringing a decline in fertility. Therefore, this theory proposes a direct relationship between the level of development and family planning performance. This study tests the following major hypothesis: *"The higher the level of development, the more extensive will be the family planning performance".* It is within the context of the above hypothesis that the following sub-hypotheses are formulated.

Sub-hypothesis A: In order to examine the relationship between each aspect of the level of development and each aspect of the family planning performance, the research tests the following hypotheses: that (i) the per capita income, (ii) the percentage of urban population, (iii) the percentage of literate population, (iv) the percentage of non-agricultural workers, (v) the percentage of female workers, and (vi) the percentage of literate females are positively correlated with each measure of family planning performance, namely, the sterilisation rate, the IUCD insertion rate, the conventional contraceptive user rate and the budget expenditure rate.

Sub-hypothesis B: In order to examine the relationship between each aspect of the level of development and the total acceptance rate, the research tests the following hypotheses, viz., (vii) each measure of the level of development, namely, the per capita income, the percentage of urban population, the percentage of literate population, the percentage of non-agricultural workers, the percentage of female workers and the percentage of literate females is positively correlated with the total acceptance rate.

Sub-hypothesis C: In order to examine the relationship between the composite measure of the "level of development" and the composite measure of "family planning performance", the research tests the following hypothesis, viz., (viii) the composite measure of the "level of development" is positively correlated with the composite measure of "family planning performance".

Analysis of data

All the variables in this study are measured with various types of measurement. The development variable of per capita income is an interval measure. The remaining variables, namely, the percentage of literate population, the percentage of non-agricultural workers, the percentage of female workers and the percentage of literate females are ratio measures. The composite measure of the "level of development" is expressed in sum of ranks of each measure of development, and therefore is an ordinal measure.

All the variables of family planning performance, namely, the sterilisation rate, the IUD insertion rate, the conventional contraceptive user rate, the budget expenditure rate, and the total acceptance rate are ratio measures. The composite measure of "family planning performance" is expressed in sum of ranks of each measure of family planning, and therefore is an ordinal measure.

The data for the hypotheses one to seven as displayed in the contingency Tables 1, 2, and 3 are analysed parametrically by Pearson's Product Moment Correlation Coefficient and tested for significance by means of the "t" test[8]. The data for the hypothesis eight as displayed in the contingency Table 4 are analysed non-parametrically by Spearman's Rank Order Correlation Coefficient and tested for significance by means of the "t" test[9]. All measures of correlation ranged from -1 to $+1$. The hypotheses are tested at the 0.05 level of significance.

Results

Table 5 gives the correlation coefficients between the level of development variables and family planning performance variables for the sixteen states of India. The results are examined in the context of the preceding three sub-hypotheses which are given below:

Sub-hypothesis A: The results show the relationship between each aspect of the level of development with each aspect of family planning performance. Hypotheses one to six are tested at the 0.05 level of significance (Pearson's r value $= 0.426$, df $= 14$). They are divided into six categories with respect to each measure of the level of development.

(i) *Per capita income*: Table 5 shows that the correlation coefficients between per capita income, the IUD insertion rate (0.522), and the conventional contraceptive user rate (0.766) are positively correlated and statistically significant at the 0.05 level. However, the correlation coefficients between per capita income, the sterilisation rate (0.325), and the budget expenditure rate (0.282) show a positive association, but are not statistically significant. In short, there is an association between high per capita income and high family planning performance in India.

(ii) *Percentage of urban population*: The correlation coefficient between the percentage of urban population and the sterilisation rate (0.481) is positive and statistically significant at the 0.05 level (Table 5). However, the correlation coefficients between the percentage of urban population, the IUD insertion rate (0.033), the conventional contraceptive user rate (0.319), and the budget expenditure rate (0.251) show a clear positive association, but are not statistically significant. Therefore, there is an association between the high percentage of urban population and high family planning performance in India.

TABLE 5

Correlation coefficients of the level of development and family planning performance in India

Variables	Correlation coefficient
A. *Per capita income Vs.:*	
1. Sterilisation Rate	0.325
2. IUD Insertion Rate	0.522*
3. Conventional Contraceptive User Rate	0.766*
4. Budget Expenditure Rate	0.282
Percentage of urban population Vs.:	
1. Sterilisation Rate	0.481*
2. IUD Insertion Rate	0.033
3. Conventional Contraceptive User Rate	0.319
4. Budget Expenditure Rate	0.251
Percentage of literate population Vs.:	
1. Sterilisation Rate	0.628*
2. IUD Insertion Rate	0.174
3. Conventional Contraceptive User Rate	0.099
4. Budget Expenditure Rate	0.595
Percentage of non-agricultural workers Vs.:	
1. Sterilisation Rate	0.443*
2. IUD Insertion Rate	0.314
3. Conventional Contraceptive User Rate	0.110
4. Budget Expenditure Rate	0.526*
Percentage of female workers Vs.:	
1. Sterilisation Rate	0.446*
2. IUD Insertion Rate	–0.610
3. Conventional Contraceptive User Rate	–0.260
4. Budget Expenditure Rate	–0.045
Percentage of literate females Vs.:	
1. Sterilisation Rate	0.592*
2. IUD Insertion Rate	0.224
3. Conventional Contraceptive User Rate	0.107
4. Budget Expenditure Rate	0.629*
B. *Total acceptance rate Vs.:*	
1. Per capita income	0.653*
Percentage of urban population	0.304
Percentage of literate population	0.447
Percentage of non-agricultural workers	0.457*
Percentage of female workers	–0.248
Percentage of literate females	0.466*
C. *Level of development Vs.:*	
1. Family planning performance	0.531*

* Indicates a correlation coefficient which is significant at the 0.05 level, one-tailed test. For A and B, Pearson's r value = 0.426, df = 14 and for C, Spearman's r value = 0.456, df = 14.

(iii) *Percentage of literate population*: Table 5 shows that the correlation coefficients between the percentage of literate population, the sterilisation rate (0.628), and the budget expenditure rate (0.595) are positively correlated and statistically significant at the 0.05 level. However, the correlation coefficients between the percentage of literate population, the IUD insertion rate (0.174), and the conventional contraceptive user rate (0.099) show a positive association, but are not statistically significant. Thus, there is an association between the high percentage of literate population and high family planning performance in India.

(iv) *Percentage of non-agricultural workers*: The correlation coefficients between the percentage of non-agricultural workers, the sterilisation rate (0.443), and the budget expenditure rate (0.526) are positively correlated and are statistically significant at the 0.05 level (Table 5). However, the correlation coefficient between the percentage of non-agricultural workers, the IUD insertion rate (0.314), and the conventional contraceptive user rate (0.110) show a positive association, but are not statistically significant. In short, there is an association between high percentage of non-agricultural workers and high family planning performance in India.

(v) *Percentage of female workers*: Table 5 shows that the correlation coefficient between the percentage of female workers and the sterilisation rate (0.446) show a clear positive association and is statistically significant at the 0.05 level. On the other hand the correlation coefficients between the percentage of female workers, the IUD insertion rate (–0.610), the conventional contraceptive user rate (–0.260), and the budget expenditure rate (–0.045) show a negative correlation. Thus, there is no clear association between the percentage of female workers and family planning performance in India.

(vi) *Percentage of literate females*: The correlation coefficients between the percentage of literate females, the sterilisation rate (0.592), and the budget expenditure rate (0.629) are positively correlated and are statistically significant at the 0.05 level (Table 5). However, the correlation coefficients between the percentage of literate females, the IUD insertion rate (0.224), and the conventional contraceptive user rate (0.107) show a positive association, but are not statistically significant. Thus, there is an association between a high percentage of literate females and high family planning performance in India.

Sub-hypothesis B: The results show the relationship between each aspect of the level of development and the total acceptance rate.

Hypothesis seven is tested at the 0.05 level of significance (Pearson's r value = 0.426, df = 14).

(vii) Table 5 shows that the correlation coefficients between total acceptance rate, per capita income (0.635), percentage of literate population (0.447), non-agricultural workers (0.457), and percentage of literate females (0.466) are positively correlated and are statistically significant at the 0.05 level. However, the correlation coefficient between the percentage of urban population and the total acceptance rate (0.304) shows a clear positive association, but is not statistically significant. On the other hand, the correlation coefficient between the percentage of female workers and the total acceptance rate (– 0.248) shows a negative correlation. Thus, as seen from the earlier hypotheses, there is an association between high per capita income, a high percentage of urban population, a high percentage of literate population, a high percentage of non-agricultural workers and a high percentage of literate females with a high family planning performance. But, the percentage of literate females seems to have no effect on the family planning performance in India.

Sub-hypothesis C : The results show the relationship between the composite measure of the "level of development" and the composite measure of "family planning performance". Hypothesis eight is tested at the 0.05 level of significance (Spearman's r value = 0.456, df = 14).

(viii) Table 5 shows that the correlation coefficient between the composite measures of the "level of development" and of "family planning performance" between the two (0.531) is positively correlated and statistically significant at the 0.05 level. Therefore, there is a clear association between the high level of development and the high family planning performance in India.

Post-hoc analysis

In an effort to explore the combined importance of the six measures of the level of development and the four measures of family planning performance, a cannonical correlation 10 between the two groups is calculated, which is shown in Table 6. The results indicate that only the first cannonical correlation (0.943) is significant. The calculated value of Chi Square is 50.84 which is statistically significant at the 0.05 level (Critical Chi Square value = 36.42, df = 24). Therefore, this reveals that there is a strong positive association between the level of development and family planning performance in India.

TABLE 6

Cannonical correlation between the level of development and family planning performance in India

Correlation coefficients for variables				Cannonical correlation
Level of development variables :				
X1	X2	X3		
–0.278	–0.157	–0.347		
X4	X5	X6		
0.465	–0.069	0.218		0.943*
Family planning performance variables :				
Y1	Y2	Y3	Y4	
0.022	0.581	–0.796	0.170	

* indicates a cannonical correlation which is significant at 0.05 level The calculated Chi Square value = 50.84, df = 24 where the critical Chi Square value = 36.42.

X1 = per capita income, X2 = percentage of urban population, X3 = percentage of literate population, X4 = percentage of non-agricultural workers, X5 = percentage of female workers, and X6 = percentage of literate females.

Y1 = sterilisation rate, Y2 = IUD insertion rate, Y3 = conventional contraceptive user rate, and Y4 = budget expenditure rate

Conclusions

In this study an explanatory attempt was made to investigate the relationship between the level of development and family planning performance in India.

The hypotheses about the relationship between the level of development and family planning performance were based on the Theory of Demographic Transition, which affirms a positive association between the two. The findings supported the theory in large measure ; seven of the eight hypotheses were in the predicted direction.

In general, the study revealed that there is a clear association between a high level of development, and high family planning performance in India. Furthermore, per capita income, urbanisation, literacy, proportion of non-agricultural workers and proportion of literate females are significant variables for the success of the family planning programme in India.

The role of the female workers did not emerge clearly from the study. Generally, it is assumed that there is a positive association between the percentage of female workers and practice of birth control in the developed countries of the world. But, India is predominantly a rural country, and the majority of the female workers are rural workers, and therefore, may not play a significant role in regard to family planning. In addition, female employment in India may not be associated with equal rights, and thus, the rational use of birth control, which is a phenomenon true only for the developed countries of the world. Therefore, further research is needed to clarify the role of the female workers in regard to family planning, possibly using urban and rural workers separately.

The relationship between the percentage of female workers and the sterilisation rate was found to be positive and significant. But, these sterilisations include both male and female sterilisations, and the majority of the sterilisations in India are male sterilisations. This fact can be interpreted as an acceptance by the male members of the family, that their sterilisation is easier, safer, cheaper, less time-consuming and hence more convenient for them than for their wives. However, further research is needed to clarify the relationship between female workers, and male and female sterilisations separately.

Finally, it is necessary to undertake studies on a larger scale to validate the findings of this study. There is an obvious need for further empirical investigations involving more development variables and also family planning variables using more accurate data and refined methodology in investigating the problems related to the family planning programme in India.

The study strengthens the observation that, for policy implications it is necessary to raise the socio-economic conditions of India to insure the success of the family planning programme in the future.

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IMPLEMENTATION OF FAMILY PLANNING PROGRAMMES IN AN INDUSTRIAL SET-UP

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Industrial workers form a major proportion of the population in urban areas of our country. The industrial sector covers nearly 17.5 millions (exclusive of defence forces) all over the country. According to the 1971 census, 32.92 per cent of the population is engaged in agriculture and 27.9 per cent in industry. This paper attempts to present a systematic approach for implementation of the family planning programme in an industrial set-up.

Industries can be classified into two types—those in the public sector like the railways, a few steel plants, refineries etc., and those in the private sector like textiles, pharmaceuticals, engineering, automobile and other concerns. They can further be divided into large, medium and small industries depending on the strength of the workers employed in each establishment.

Background of industrial workers

Industrial workers hail from rural and semi-rural areas. The pressure of population on the land and growing unemployment induces rural youth and adults to leave the villages and come to the nearby urban areas in search of employment. These youths and adults nurtured in an atmosphere of age-old traditions, customs and mores are suddenly exposed to a totally new situation where life is primarily dictated by mercenary values, matter of fact human relations and status and prestige consciousness. The rural young man feels a sense of anonymity and helplessness in an urban world of money, machines and the mass of men. He is exposed to a struggle for life in an urban situation. His awareness of the problems of urban life in general and of population growth in particular is, therefore, conditioned by the urban situation in which he lives.

Characteristics of an industrial establishment

An industrial establishment like a factory, a mill or an industrial concern offers a suitable area for promoting family planning. It is organised and brings together from 50 to 5000 workers at a place where production of goods goes through different stages. Workers reach the factory at a definite time and work there for a fixed number of hours. Administration and management of an industrial set-up are spread over various departments and sections and a feeling of belongingness prevails among workers of the same department and section. The workers feel a sense of loyalty towards the mill or the factory and its management and the administration when the relations between the management and workers are cordial and peaceful. The most convenient and useful factor of an industrial set-up is that at one place, a large adult population, mostly male, and of mixed group—unmarried, newly married, married with one or more children and sterile, can be contacted at different shifts of working hours of the industrial establishment.

Job responsibilities of a social worker

The promotion of family planning in an industrial set-up has to be done by a full-time and trained social worker or extension educator. Since family planning deals with the personal and delicate areas of human behaviour, the social worker has to be mature, objective and sympathetic. He must have a concern for the welfare of the people, he must be convinced about the philosophy of family planning and must be committed to the cause of family planning. The social worker with these requirements has to fulfill the following job responsibilities: He has to

(i) Know the industry in all its aspects—working, administration, welfare activities and other facilities, trade unions, etc.

(ii) Conduct a baseline survey for determining the eligibility of workers for use of contraceptives and acceptance of sterilisation.

(iii) Prepare a department-wise and section-wise list of eligible workers for advice on spacing and limitation.

(iv) Contact eligible workers individually or in groups for motivating them for family planning.

(v) Organise and conduct various types of informational, educational and motivational programmes like group and mass meetings, film shows, exhibitions, etc.

(vi) Organise orientation training camps and one-day seminars, for heads of sections/departments, worker-teachers, plant-level leaders, compounders and other influential leaders in the industry.

(vii) Arrange for a regular supply of condoms for the workers.

(viii) Follow up all workers using contraceptives, sustain their interest in the use of contraceptives and strengthen their motivation by further assurances, support, explanations, additional information and clarification.

(ix) Refer eligible workers for sterilisation to family planning centres and organise a vasectomy camp within the industrial premises.

(x) Regularly follow up workers operated at the family planning centre and the camp and arrange for a semen examination three months after the operation.

(xi) Keep up-to-date and proper records of the survey-work, case cards, contraceptive supplies, educational programmes and follow-up.

(xii) Refer wives of workers who are unwilling to use a method and to get themselves operated for advice regarding the IUD, diaphragm and jelly, oral contraceptives and tubal ligation, to family planning centres and hospitals.

(xiii) Utilise satisfied workers for motivating others for family planning. They can help in organising group and mass meetings, film shows and exhibitions.

(xiv) Maintain a daily diary wherein he has to write in brief about the work done during the day in the industry and plan a weekly, monthly, and quarterly schedule of work.

(xv) Keep the management—Personnel Officer, Labour Welfare Officer, Medical Officer and Trade Union leaders, informed about the progress of the work done and discuss with them the future plans.

Family planning communicators in an industrial set-up

Communication precedes motivation for acceptance of a family planning method. The objective of communication is to establish a commonness between the source and the destination, the sender and the receiver. Applied to the family planning programme, it has to establish a rapport, a relationship, between the social worker and the industrial worker at whom the message of family planning is directed.

The factory, the mill or a plant has a definite staff of personnel with a clear cut hierarchy in all departments. The Personnel Officer plays a leadership role in the organisation of a mill or a factory. The Labour and Welfare Officers, the Medical Officer, the Trade Union leader, the heads of the departments, the compounder, the teacher of the workers' education class, all come into close contact with the workers of the factory or the industry. The workers seek their advice in matters related to their job, health, etc., and approach them for guidance in personal problems and at times of difficulties. The Labour and Welfare Officers, the Trade Union Leaders, the Medical Officer, etc., therefore, play no less a significant role in influencing the decision-making process of the workers. They are in a position to communicate the message of family planning in an effective manner, since they combine both authority and a concern for the workers' welfare. The compounder, the worker, the teacher, the plant-level leader can also wield influence in getting the message across to the workers. To this, can be added a worker who is a contraceptive user or who has undergone a vasectomy operation.

Since family planning is a personal and delicate subject, communication and motivation has to be on an individual basis. Complete and up-to-date information should be given to those who need it. The informed and satisfied beneficiary—a regular contraceptive user and a worker who has undergone the vasectomy operation—is most likely to pass on the information he has received and the experience he has obtained to another whom he thinks would be interested in sharing his information and experiences. As one lamp can be lighted from another, one individual can inform and guide the other individual in the process of communication, education, motivation and decision-making.

Communication media in an industrial set-up

The film, the press, the radio, the exhibition, the poster and other printed material are the mass communication media used in the dissemination of information in the family planning programme. Motivation for family planning and acceptance of a contraceptive or sterilisation is the result of the cumulative effect of a number of mass communication media used and approaches employed. It cannot be attributed to one solitary medium or approach. In an industrial set-up the journal/periodical published by the factory, the trade union, the group meetings attended by influential, power-wielding persons, potential acceptors addressed by satisfied beneficiaries, trade union leaders and personnel officers convinced of the utility of the family planning programme, the educational programmes or essay competitions arranged by voluntary organisations, and the workers' education classes, can go a long way in communicating the message of family planning and making the workers think about the urgency of family planning in their personal lives

The family planning programme—A joint effort between the management, labour and a voluntary agency

In an industrial environment, the family planning programme can be planned and implemented on a regular and systematic basis if an outside agency takes up the responsibility of starting a programme. Since the agency will be an independent one, totally uninterested in the industry's problems—such as bonus, strikes, lock-outs, etc.—it can employ its own staff and have its own approach of work. To an outside agency, the management should provide all the necessary facilities like permission to approach the workers in the departments, seating arrangements for the social worker, a suitable place for keeping contraceptive supplies and holding vasectomy camps, and accommodation for organising film shows, exhibitions, group and mass meetings.

The management's active interest and positive participation in the family planning programme can go a long way in creating and sustaining motivation for family planning in the minds of the workers.

The camp approach

In creating an atmosphere for family planning, the camp approach occupies a prominent place. Much before the scheduled date for a vasectomy camp, the social workers start talking about and informing the workers about the camp. The names of willing, eligible workers are registered, notices are displayed on boards, the departmental heads issue circulars about the camp, and post-operative leave is sanctioned to the workers. The Medical Officer, the compounder and the other staff help in making arrangements for the camp. The motivators start their work of contacting eligible cases—the doubting Thomases ask for clarifications and explanations from their friends who have been operated before, the satisfied worker convinces and motivates with a sense of confidence and experience—the border-line cases try to make up their minds. And, on the actual day of the camp, the number of registered cases may go up or may reduce.

The camp approach is useful not only for bringing in more cases at a time but it also helps in creating a better climate for vasectomy as a method of limitation after a certain number of children. The camp approach is ultimately a joint programme of the management, the industrial workers, their plant level leaders and the family planning worker. It makes the involvement and participation of the management and the unit level Trade Union leaders more useful and effective.

Last but not the least, it is essential to inform and involve the management, the unit level Trade Union leaders, and other influential workers in all the stages of programme planning and programme implementation. This will give them a feeling of participation and partnership in the industry's family planning programme. An increase in industrial production and self-reliance in the home through family planning can well go together. The management and unit level leaders should take special efforts in conveying the family planning message and bringing home to the workers that they can lead a fuller, richer and happier life if they have less family worries, anxieties and tensions. Acceptance of a small family norm leads to a better standard of living, an increased efficiency at the work-place and more satisfication in family life.

NO MOTIVATIONAL PERFORMANCE : A CASE STUDY OF AUXILIARY NURSE MIDWIVES IN RAJASTHAN

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Introduction

Since the integration of maternal and child health services with family planning, the Auxiliary Nurse Midwife (ANM) has become the key person who delivers the services at the grass-root level. Apart from providing ante-natal and post-natal care and conducting deliveries, she gives house-talks, persuades women to accept family planning and distributes conventional contraceptives, covering an area with a population of 10,000 during the course of her work. The acceptance of family planning by rural women depends upon the confidence they have in the ANM. In addition to intensive tours of her area and motivational work, she is also responsible for maintaining the eligible couple survey register along with other registers and records of her area. She is also expected to train indigenous *dais* and to supervise their work. The male counterpart of the ANM is the Family Planning Health Assistant (FPHA). The ANM and FPHA together form the 'Motivation Team' for family planning in rural areas. Usually, one Lady Health Visitor (LHV) supervises the work of four ANMs. For maintaining records, the ANM has to work under the guidance of the computer. The overall in-charge of these ANMs working either at the sub-centre or the Primary Health Centre, is the Medical Officer-in-Charge of the Primary Health Centre.

Selection of cases

In January 1972, the International Institute for Population Studies, Bombay, carried out a survey in six districts of Rajasthan, namely Ajmer, Barmer, Bikaner, Chitorgarh, Jaisalmer and Kota to evaluate the performance of ANMs during the calendar year 1971. In Rajasthan 1,169 posts of ANMs have been sanctioned but at present only 717 ANMs are in position. Of these, 171 ANMs were interviewed on a pretested schedule. This study indicated that by and large the performance of the ANMs was poor in terms of the number of cases of IUD and sterilisation that they had motivated. The analysis of the performance of 171 ANMs also brought out that of the 68 ANMs, who had worked during January to December 1971 at one particular centre, ten ANMs had not motivated even a single person to accept either the IUD or sterilisation. Out of these ten ANMs, five have been selected for the presentation of case studies for this paper.

Why case studies

The meaning of the term 'Case Study' depends on the context and the subject matter. The case study approach has been widely used in the field of law, psycho-analysis, administration and social work. The comprehensive goal of the case study, even though it is not reached, has important and useful consequences. Case studies sometimes typically end up by focusing on a few problems that appear to be of major importance. In the study of the "Evaluation of work done by Auxiliary Nurse Midwives, during January to December 1971 in six selected districts of Rajasthan," the ranking of the ANMs for performance has been done on the basis of the number of cases they had motivated for acceptance of the IUD or sterilisation. While doing this, the characteristics of individual ANMs which might influence the performance are not likely to be sufficiently highlighted. In the present paper attempts have been made to bring out salient individual characteristics of these ANMs who could not motivate even a single case in favour of family planning and to narrate their responses in their own words with respect to the important features of the family planning programme with the intention of drawing attention to these problems which would be of major importance in improving the individual performance of ANMs, in the rural areas of Rajasthan.

Case 'A'

'A' belongs to the 'X' district of Rajasthan and has been working at one of the best Primary Health Centres of the district, in her home town, for the last three years. She has been working on the family planning side (the other side being Health) at the same sub-centre for the last two years. This young (22 years) Roman Catholic nurse is married but stays alone at the sub-centre building rented by the Government. During the period January to December 1971, either she has visited her husband or he has visited her twice a month on an average. She has two living children (one son and one daughter). Her youngest child is only one and a half years old.

'A' is educated upto Junior High School and does not have any work experience other than the present job of an ANM. She completed a two years' ANM's training course at Victoria Hospital, Ajmer, in 1963. She has a good opinion about her training : "I have got this job of an ANM because of the training. During the training period, I learnt so many things, especially how to give injections and how to conduct deliveries. . . ."

'A' has no formal training in family planning. She knows the local language of the rural areas very well. Though she has not been provided with a delivery kit or medicines for distribution, she is well aware of her medical duties. On the other hand, she does not know about any of her duties in the field of family planning. She covers an area of five villages Regarding the size of the population which one ANM is supposed to cover, she says: ". . . one ANM works in an area with a population of 500. . ."

She maintains her daily diary, eligible couple survey register and conventional contraceptive issue register. When asked to give the details of her work, she replied: ". . . my records are not up-to-date and I am not able to tell you anything about my work. . . ."

'A' is expected to visit her field area 15 times in a month and is also expected to motivate seven cases for IUD. She has not taken any kind of help from her senior colleagues. There is no Lady Health Visitor to supervise her work. The Family Planning Health Assistant does not visit her area: ". . . he has not come to my sub-centre since a long time. . . ." She is able to cover the population and area assigned to her in a period of one month. She does not have any personal problems. Regarding problems associated with her work, she says, ". . . I do not have a fourth class employee to assist me. It is very painful to tour on foot and some areas are so bad that even walking is difficult. . . ."

'A' is not satisfied with her job. She does not want to work for family planning: ". . . I want to work on the Health side. My religion does not approve of family planning. . . ."

In her opinion, to make the family planning programme successful, ". . . Medicines should be given to ANMs for distribution . . . the Medical Officer should visit the sub-centre at least once a week . . . and there should be facilities for the treatment of seriously sick patients . . .". Her reaction towards family planning is favourable: ". . . I have a good opinion . . . Family Planning is a must . . . it is difficult to look after many children . . .".

Case 'B'

This young widow (23 years) has been working for the Health department at one of the Primary Health Centres of her home town since the last one year. This particular Primary Health Centre is very far from the district headquarters. 'B' is a Brahmin by caste and has two sons. She is educated upto Junior High School.

After completing her two years' training in 1968 at the Central

Hospital, Udaipur, 'B' took up the job of an ANM. Regarding her ANM's training she says, ". . . I have learnt about health work and vaccination . . .". She had also taken a week's orientation course in family planning in 1971 at the District Family Planning Bureau.

'B' does not have residential quarters at her work place and no facilities have been provided to her. She is well aware of her duties both on the medical and family planning side. She covers the 10,000 population allotted to her and visits the ten villages in which this population is distributed. On an average, during the period January to December 1971 she has visited her field 16 times in a month. She has conducted 15 labour cases during the same period. She is well aware of her target for family planning.

'B' has not taken any guidance from her senior colleagues to motivate those persons whom she was not able to motivate successfully. The post of a Lady Health Visitor at this particular Primary Health Centre is vacant. By virtue of seniority, the Medical Officer of the Health side is in charge of the Primary Health Centre. According to her, the Medical Officers of the health and of the family planning sections are not on good terms and the Medical Officer for Family Planning has been trying to abolish this particular Primary Health Centre. 'B' is not expected to make follow-up visits for vasectomy cases and though she is expected to follow-up the tubectomy and IUD cases she has not done so. She supervises the work of local *dais* only in complicated cases of delivery.

'B' is not able to make the required number of tours of her area in a month. When asked for the reason she said, ". . . I do not have any fourth class servant to assist me. There are a number of forests in my area and I feel frightened to go alone . . .". While talking about her personal problems 'B' narrated the following incident:

". . . Some people of the Panchayat Samiti once came to my residence at about 9 p.m., and asked me to attend a delivery case. I accompanied them and after reaching the house I found that there was no woman there. They tried to rape me, but somehow I escaped . . . this case has been reported to the police and the matter is now in the court . . .".

'B' is satisfied with her job as an ANM: ". . . I get opportunities to serve others and like it. . . . I keep myself engaged in order to pass my time . . .". For better performance 'B' insisted, ". . . One fourth class servant should be provided for assistance . . . the required equipment for midwifery work should be given . . .". In her opinion, ". . . Family Planning is very important. Better education can be given only if one has a limited number of children . . .".

Case 'C'

'C' belongs to Alpi District of Kerala and seven years ago she migrated to Rajasthan for taking up the profession of an Auxiliary Nurse Midwife. She has been working at one of the Primary Health Centres of 'Y' district since the last two years. This 25-year old ANM has been working for the health side for the last 5 years. 'C' is married and staying with her husband at the place of posting. She has two children (one son and one daughter), the youngest being 9 months old. This Christian (Protestant) Nurse speaks Malayalam and has had Junior High School education.

'C' completed her two years' ANM's training at PBM Hospital, Bikaner in 1965. She completed her training in nursing and first aid and also family planning at the Central Field Unit of Jaipur in 1967. During this latter orientation course she was taught loop insertion and methods of motivation.

Though 'C' hails from Kerala, she speaks the local language very well. She has the facility of residential quarters at the place of duty. A delivery kit and medicines for distribution have been provided to 'C'. She has knowledge of both—health and family planning duties. She covers five villages in a five-mile area, but is not aware of the size of the population which should be covered by one ANM. She maintains ANC and PNC registers along with the daily diary. She has not done a survey of the eligible couples of her area.

On an average, 'C' has made 12 tours of her area in a month. She is expected to make at least 20 tours of her area in a month. During January to December 1971 she has trained four local *dais* and has conducted 100 ante-natal and 50 post-natal visits. She has not taken help from any of her senior colleagues to motivate those persons whom she was not able to motivate successfully. She does not perform IUD insertions and during the period January to December 1971 she has followed up five cases of vasectomy and 40 cases of IUD.

As 'C' is working at the Primary Health Centre, she does not work with the Family Planning Health Assistant. She attends the delivery cases along with the local *dais*. As far as assistance to the LHV is concerned she says, ". . . We go together on tours. I assist her in motivation for vasectomy and tubectomy cases. . ."

Case 'D'

This old (47 years) Christian (Protestant) nurse belongs to the 'Z' district of Rajasthan. She has been working for the health side in her home district since the last 22 years. She has been working at the present sub-centre for the last one and a half years. At the sub-centre village, she lives in a rented house along with her husband. She has 5 sons, the youngest being 17 years old. 'D' has had only primary education.

'D' is a trained Auxiliary Nurse Midwife. She had completed her two years training in 1948 at King George Hospital, Ajmer. She says: ". . . the training of an ANM has proved useful for explaining the health needs to the villagers . . .". She has not been formally trained for family planning work.

A fourth class assistant has been provided to 'D' at her sub-centre. She has a delivery kit and vaccination equipment. She herself performs smallpox vaccinations. She is well aware of her medical duties, but she does not recall any one of her duties concerning family planning. She covers six villages and she does not have any idea about the total population which should be covered by one ANM. With the help of her daily diary, ante-natal register and post-natal register she reported, that on an average, during the period January to December 1971 she has made 14 field visits in a month, whereas she herself admitted that she is expected to make 20 visits in a month. During this period, she conducted 12 labour cases and gave ante-natal and post-natal care to 205 and 110 cases respectively. She is not aware of her monthly targets for family planning.

'D' has also not taken the help of any senior colleague to motivate those persons whom she was not able to motivate successfully. She does not perform IUD insertions. Though she admits that she is expected to make follow-up visits, so far, she has not followed up even a single case of either sterilisation or IUD insertion. Since there is no FPHA in her area she says: ". . . I am not able to talk to the man about vasectomy. . . ." She has received guidance from the Medical Officer (Health) and the Lady Health Visitor (Health) for ante-natal care and record keeping. She supervises the work of local *dais* only when complications arise.

Though 'D' does not have any personal problems, this is what she has to say about her work: ". . . I have to go to the field at about 8 a.m., and I come back at 2 p.m. I feel very tired after tours. I do not get time to cook my food because in the afternoon I am assigned to do dispensary work. . . . By the time I reach the villages, most of the women have gone to work in the field. . . ."

She is satisfied with her job. ". . . God has made me capable of assisting sick persons. . . ." She is of the opinion that: "The family planning programme cannot be successful unless the people of the rural areas are educated. . . ." The reaction of 'D' is favourable towards family planning. She says: ". . . Family Planning is good. If a poor women get too many children, they will not be able to give them good food and education. . . ." Towards the end of the interview 'D' insisted that her responses should be kept confidential.

Case 'E'

'E' has been working for the family planning section for over two years at one particular sub-centre. Since the beginning, 'E' has been posted in her home town. 'E' is 26 years old, belongs to a Scheduled Tribe and has been educated upto matriculation. She stays alone in the sub-centre building provided by the Government. Her husband works in the city and during January to December 1971 they have visited each other 24 times. 'E' has two daughters the youngest being one year old. Before taking up the job of an ANM, she was a teacher in a primary school for nearly six months.

During the period January to December 1971, 'E' has made 144 field visits (12 per month). She says that she is expected to make 12 field visits in a month. She has given an over-estimation of her monthly targets for family planning.

'E' has not taken the help of her senior colleagues to motivate those persons whom she was not able to motivate successfully. She does not perform IUD insertions. She says that she is not supposed to follow up cases of vasectomy, and tubectomy, but has followed up 4 cases of IUD. She guides the work of local *dais* only when complicated delivery cases arise. She also assists the Lady Health Visitor (Family Planning) in carrying out loop insertions.

'E' is not able to cover her field area in a month. She says that she is not allowed to make more than 12 field visits in a month and therefore she can cover only 12 villages out of a total of 14 villages allotted to her in a month. 'E' did not report any personal problem.

'E' completed her two years ANM training at the General Hospital at Chittorgarh in 1968. According to her, the ANM training: ". . . is not at all useful in her present job of family planning. . . ." 'E' was trained in family planning through a ten-day orientation course at the District Family Planning Bureau, in 1969: ". . . I learnt about the eligible couple survey during this training. Though I try to motivate people in favour of family planning by the methods of motivation taught at the training course, I don't get any success. . . ."

'E' knows the local language of the rural areas very well. Very often, she gets medicines to distribute. She covers an area of 14 villages and is not aware of the size of the population which should be covered by one ANM. 'E' maintains all the required records but some of them are incomplete.

'E' is satisfied with her job because: ". . . In this line of nursing, there are better future prospects. . . ." Giving her reaction on how to improve the performance of ANMs she says: "... medicines should be provided for distribution . . . a full delivery kit should also be provided. . . ." She is of the opinion that: ". . . Family planning should be adopted by everybody because by doing so one will get all the facilities. . . ."

Comments

The cases are interesting because in spite of one year's work these five ANMs could not persuade or motivate even a single person in favour of family planning. It is evident from these cases that the base work required for motivation, such as field visits, ante-natal and post-natal care and supervision of local *dais* has been quite satisfactory in view of the limited resources available to these ANMs. These cases lack self-initiation for motivational work. The lack of co-ordination between the workers on the health side and those on the family planning side is another important reason for their poor performance. The integration of family planning work with medical and health activities could not be brought about earlier, though it is learnt that the State Government is going to issue orders which will bring full integration of all activities at the district and lower levels.

The concept of a 'Motivation team' in rural areas is not up to the mark in practice. Team work is almost negligible. The Family Planning Health Assistant and the Auxiliary Nurse Midwife do not work in full co-operation and their work is not well co-ordinated. In spite of their complete failure in motivational work, these ANMs have not taken help from their senior colleagues. In other words, these ANMs have not taken up the work of motivation quite seriously. They also lack the proper knowledge of job responsibilities, such as the area to be covered, number of visits to be made, etc. The concerned Medical Officers and Lady Health Visitors are either unaware of the performance of these ANMs or have not given serious attention to it. Generally, the Medical Officers appear to be interested in the annual performance of the Primary Health Centre as a whole, rather than in individual performance. The ANMs are not the only ones to be blamed for such a poor show. Success in the motivational programme is a result of the work of all the staff members of a Primary Health Centre and the local leaders of the area.

The training for family planning is found to be inadequate. Even after completing their training, ANMs are not aware of their duties. The methods of motivation taught during the course do not seem to work in the field. More emphasis may be given on practical training in the orientation courses organised by the Central Family Planning

Field Units. In general, the ANMs feel that family planning work is imposed on them, that it is not a part of their duties and that is why they do not seem to have any regrets about their poor performance.

Some of the problems faced by the ANMs are similar. Of course, there is no guarantee that if all the facilities are provided to them, their performance would improve. Still, it is worth pointing out that the Auxiliary Nurse Midwife should be provided with at least a delivery kit. Basically, there appears to be no difference between a local *dai* and a trained ANM. Both of them go bare-handed, without any equipment and medicines, to conduct deliveries. On the other hand, the rural women feel more confident in an aged and experienced local *dai* than in these young ANMs and thus day by day the ANMS are losing their prestige and confidence. It is learnt that these delivery kits are supplied by UNICEF on the fulfilment of certain conditions, which, in Rajasthan, are very difficult, and hence very few kits are received. Besides, the State Government is unable to provide them out of the State budget.

The ANMs who work for family planning are selected at random. Since the ANM is a worker of the lowest cadre, the authorities and policy makers feel that she is suitable for any type of work. The motivational work for family planning, especially in rural areas, is not an easy task and, in this, the ANM plays a very important role. If an ANM is not interested in family planning, does not have the aptitude for motivational work and does not have a positive attitude towards family planning, it will be a waste of training, money and time to appoint such a person to work for the family planning programme.

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FACTORS AFFECTING SPACING OF BIRTHS

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Introduction

A study of the interval between births in a non-contraceptive population furnishes important information on family growth and on variables that affect the principal components of spacing of births. It explains in several ways, the mechanism by which birth intervals differ within, and between, societies and also indicates the varying effects of changes in fecundability, foetal death rates and/or duration of location, on fertility rates. The intervals between births also have an important bearing on the health of the mother and the children.

During the last few years, several research workers[1-6] have tried to point out some of the physiological determinants of the length of the interval between two consecutive live births, e.g. (1) the duration of post-partum amenorrhoea, during which conception usually does not occur, (ii) the susceptible period, when the woman is menstruating and is exposed to the risk of conception and actually conceives—also known as the waiting period, and (iii) the gestation period or duration of pregnancy. It is quite likely that socio-economic and demographic factors may affect one or more of these determinants of birth interval and thereby may occasion shorter or longer intervals between successive births.

The present paper attempts to bring out the effects of some such factors on the birth interval. The main factors which have been studied here are demographic and socio-economic factors. The former include the present age of the mother, age of the mother at the time of first marriage and duration of marriage, sex of previous child and survival of previous child. The socio-economic factors considered here are religion, ecology, literacy and monthly income.

Data

The data have been obtained from the schedules of a demographic survey of Patna sponsored by the Ministry of Health, Government of India, and conducted by the Department of Statistics, Patna University, in 1955. The study analyses 800 schedules representing a 25 per cent sample drawn systematically from the total schedules filled in during the survey. Since the sampling unit of the survey was the household and not the individual, the total number of women covered in this study was 1,107. Further, as the family planning programme had very little place among the general population in 1955, it can be assumed that the women included in the study were not using contraceptive methods.

Results

Demographic factors

For a non-contraceptive population, the interval between marriage and first birth is heavily dependent upon the age of the woman at the time of marriage. This may not be true for the intervals between other successive births. Subject to the validity of the statement, the intervals between successive births may be taken as a good indicator of fertility, being independent of variations in the age at marriage of the females in the population.

(i) *Present age of the mother* : Table 1 gives the average intervals between successive births according to the present age of the mother. It indicates that the mean interval between births increases with the age of the mother and that this is generally true for almost all order of births except in a few cases. The average interval between marriage and first birth for young mothers, below 20 years of age, was only 40.2 months, whereas for older mothers who were over 50 years of age it was as high as 65.2 months. These differences in birth intervals between the younger and older mothers could be due to several reasons: (a) child marriages were more prevalent in those

TABLE 1

Average birth interval by present age of mother

	Interval between births (in months)						
Present age (years)	Marriage and 1st	1st and 2nd	2nd and 3rd	3rd and 4th	4th and 5th	5th and 6th	6th and 7th
15-19	40.2	27.8*					
20-24	46.7	29.3	32.2	32.5	29.5*	29.5*	
25-29	43.9	32.8	28.6	29.3	33.5	31.2*	
30-34	44.8	34.6	34.6	31.4	34.4	33.1	36.3*
35-39	47.5	37.4	35.4	31.8	34.5	36.2	31.1
40-44	51.2	34.3	35.4	36.6	36.6	36.4	32.8
45-49	55.3	49.7	36.1	35.0	33.9	40.2	32.3
50 +	65.2	37.6	37.2	38.8	37.4	36.9	34.1

* Calculations based on less than ten observations.

days than at present, and the "gawana" ceremony, i.e., the wife's first visit to the husband's house after which the couple begins to cohabit, was performed after a comparatively longer interval in the case of older women who had married much earlier, (b) young mothers who did not have any child up to the date of the present survey have been eliminated and thus long intervals which could pull up the average have been eliminated, (c) a strict *purdah* system was observed by older women even within the family, providing fewer opportunities for free communication between the wife and husband and thereby increasing the interval between successive births. Table 1, however, suggests a relaxation in the rigidity of the observance of *purdah* resulting in a decrease in the intervals between births in younger mothers, and (d) it generally happens that older women tend to forget those children who had been born to them and had died in infancy, a long time before the present survey was carried out. Such lapses in reporting are bound to show increases in the calculated birth intervals.

(ii) *Age of the mother at first marriage and the duration of marriage*: The upper half of Table 2 gives the birth intervals between marriage and subsequent births according to the age of the mother at first marriage. The average interval between marriage and first birth is observed to decrease with an increase in the age of the mother at first marriage. To some extent, this is also true for second and third order births. The average interval between marriage and first birth for a woman married at the age of 20 or

TABLE 2

Average birth interval by age at first marriage

	Interval between births (in months)							
Age at first marriage (years)	Marriage and 1st	1st and 2nd	2nd and 3rd	3rd and 4th	4th and 5th	5th and 6th	6th and 7th	
5-9	71.7	38.7	34.5	30.5	38.8	34.5	35.1	
10-14	52.2	33.9	36.1	35.0	32.9	36.7	32.4	
15-19	39.3	33.6	32.5	35.1	35.4	36.6	35.1	
20 +	32.1	33.2	32.0	29.2	38.7	36.5	39.5	
								Mean
Group I: (5-14)	55.0	34.4	35.8	34.3	33.6	36.4	29.6	39.5
Group II: (15-24)	38.4	34.1	32.3	34.5	35.4	37.1	35.3	35.5

more was less than half that for a woman married in her childhood (5 to 9) years, being 32.1 and 71.7 months respectively.

When the women in the sample were distributed into two groups consisting of those married between 5-14 years of age (Group I) and those married between 15-24 years of age (Group II), the intervals between subsequent births for women of Group I were greater than those for women of Group II, up to the third birth. This trend was reversed for the fourth and higher order of births, the average interval of the two groups being almost equal for the fourth interval. This reversal may be due to the fertility differential of women at different ages. It has been calculated that the average age of a woman at the time of her fourth delivery is 23 and 31 years[*] for those marrying between 5-14 years and between 15-24 years respectively. The closed birth interval showed such a variation because fertility at 23 is higher than at 31. The average birth intervals for the two groups of women were 39.5 and 35.4 months respectively. The interval between marriage and first birth was much higher than that for the other birth orders, mainly due to the biological incapacity of most of the women in this group. A large number of women included in this survey were married much before they were capable of bearing children. Another observation was that, in general, at the same age at marriage, the interval between marriage and first birth monotonically increased with the duration of marriage (Table 3) probably due to the late performance of the "gawana" ceremony in the case of women married earlier than in the case of women who married later. This trend holds good to a sizeable extent for other orders of births also. Of course, there are some deviations due to random causes which may again be attributed to the *purdah* system which was more prevalent among older women in earlier days.

(iii) *Infant mortality and sex of previous child*: If a pregnancy is not completed and a miscarriage occurs, which remains unreported, the interval between the earlier and the next birth becomes longer. Another important factor which affects birth intervals is infant mortality. If a child dies shortly after its birth, often a new pregnancy begins within a short interval. Similarly, the sex of the previous child is of significance in increasing or reducing the birth interval for the next birth. Table 4 gives the birth intervals according to the sex and life span of the previous child.

It is interesting to note that for every order of birth, except the

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[*] The average birth intervals for Group I up to the fourth birth sum up to 159 5 months, i.e., 13.3 years and adding this to the mid-value of age at marriage of the 5-14 age group. i.e., 9.5 years. gives a total of 22.8 years. Similarly for Group II.

TABLE 3

Average birth interval by age at marriage and duration of marriage

Age at Marriage (years)	Duration of Marriage (years)	Interval between births (in months)							
		Marriage and 1st	1st and 2nd	2nd and 3rd	3rd and 4th	4th and 5th	5th and 6th	6th and 7th	7th and 8th
0- 9	0- 4	55.9*							
	5- 9	68.3	36.2	35.5	35.9*				
	10-14	82.8							
	15-19	71.6	38.3	36.1	21.0	35.7			
	20-24	77.5	42.3	30.7					
	25 +	80.2	39.5	60.6	36.0	45.3	31.5	30.8*	
10-14	0- 4	37.3	24.5*						
	5- 9	49.6	27.4	34.5	29.5				
	10-14	47.6	31.0	30.8	30.9	22.6	34.5*		
	15-19	50.6	32.1	34.8	33.6	32.3	42.3		
	20-24	57.5	34.3	35.7	35.0	31.5	32.6	33.3*	31.2
	25 +	52.8	34.3	37.7	37.4	35.2	37.7	30.8*	30.4
15-19	0- 4	27.3	23.4*						
	5- 9	30.8	27.9	27.3	30.5*				
	10-14	32.0	31.9	27.0	24.9	27.8	24.5*		
	15-19	35.3	32.9	32.9	33.9	37.5	26.3*	32.8	
	20-24	46.7	37.6	33.6	41.9	37.0	33.9	33.6*	29.5
	25 +	46.9	38.8	37.5	37.1	35.6	42.5	36.0*	28.4

* Calculations based on less than 15 observations

TABLE 4

Average birth interval by sex and life-span of previous child

Survival of child	Sex of previous child	Interval between births (in months)							
		Marriage and 1st	1st and 2nd	2nd and 3rd	3rd and 4th	4th and 5th	5th and 6th	6th and 7th	7th and 8th
Alive	Male	—	35.2	37.7	33.2	36.5	39.6	35.0	32.9
	Female	—	34.8	33.3	34.7	35.1	35.2	34.5	30.4
Died within a year	Male	—	28.1	29.1	30.1	30.5	31.2	24.5	17.8*
	Female	—	26.2	24.5	23.1	44.5	40.2	42.8	
Died in second year of life	Male	—	28.8	29.5	29.2	30.7	29.9	25.7	
	Female	—	27.5	23.8	23.8	42,0	40.2	40.1	

* Based on less than 15 observations

third, the interval between consecutive live births, when the previous issue was male and alive, was greater than when the previous child was female and alive. This trend was also maintained upto the third order of birth, when the previous child was not living. Though the actual difference for each order was not very significant, the consistency of difference in almost all orders of births suggests a preference of male births over female. One reason for non-preference, common to all the patrilinear societies of the world, is the transmission of family name and property. A second reason shared by India with many other agrarian societies of the world is that sons are invaluable in providing economic support in old age or in cases of early disability of the parents. Religion, the dowry system, etc., are other factors for son-preference. This finding was further corroborated in Table 5 where the calculated value of x^2 is highly significant. The value of Pearson's Coefficient "C" which happens to be equal to 0.11. also suggests a positive association between the interval between subsequent births and the sex of the previous child.

TABLE 5

Frequency table of birth intervals by sex of previous child

Interval between births (in months)	Previous child male and alive	Previous child female and alive
Below 20	120	127
20 to 29	483	291
39 and more	302	162

x2 = 19 86, d f = 2 (highly significant)

Referring back to Table 4, we observe that for all orders of birth, the interval when the previous child was male and dead was less than when the previous child was male and alive. For the first order of birth, the former was only 28.1 months, whereas the latter was as high as 35.5 months, the difference between the two being 7.4 months. This difference for the fifth birth order increased to 8.5 months. The results also show that while in the former case, i.e., when the previous child was male and dead, the interval between subsequent births increased monotonically up to the fifth order of birth, it was not true for the latter. The inter-relation between infant mortality and birth interval is of a complex nature.

The reasons for such differences in interval perhaps lie in the fact that the early death of a child may create in many parents the desire for another child. On the other hand, physiological factors may also play a role, because, the nursing of the infant ceases after its death. Potter[7] observed that the removal of infant deaths increased the average length of amenorrhoea from 10.8 months to 11.5 and reduced the variance from 55 to about 50. Similarly, Jain[8] and Krishnamoorthy[9] found that breast-feeding increased the length of amenorrhoea and thus prolonged the inter-pregnancy interval.

(iv) *Birth interval and family size*: The birth interval depends upon the time sequence of previous children. For a non-contraceptive population, Talwar[10], Dandekar[11], and Henry[12] found a positive association in the intervals between different confinements, i.e., the earlier the first child, the shorter is the spacing between it and the second. Corresponding relations were also found for later births. This finding has been further corroborated in Table 6.

Table 7 includes only those women who have been married at the

TABLE 6

Frequency table of birth intervals between first and second births by interval between marriage and first birth

Average interval between first and second births (in months)	Interval between marriage and first births (in months)			
	0-14	15-24	25-39	40 +
0-24	44	43	39	33
25-39	33	31	34	36
40-59	19	24	16	19
60 +	4	2	11	12

TABLE 7

Parity-wise distribution (per cent) by interval between first and second births

Interval between first and second births (in months)	Number of children (per 100 women who delivered within 14 months of marriage)				
	2	3	4	5	6 +
0-19	6	9	11	17	57
20-39	5	9	12	13	61
40-59	12	7	12	23	46
60-99	21	5	10	24	40
100 +	40	27	7	6	20

age of 15 years or more to assure that the interval between marriage and the first birth may not increase due to physical unfitness to produce children. The table shows that out of 100 women who have given their first birth after fourteen or less months of marriage, 44 had their second child before they completed 25 months and only four women after 60 months or more of their first delivery. These values, however, were 33 and 12 respectively when the first birth had occurred after 40 or more months of their first marriage. This is in agreement with the above statement, i.e., the earlier the first child, the shorter is the spacing for the second.

The relation to the final size of the family can be demonstrated from Table 7, which shows the percentage of only those married women who have either crossed the child-bearing period, or have spent 25 years of married life. Duration of marriage has been calculated from the age of 13 onwards in the case of those women who have been married before 13 years of age, and yet have not crossed their child-bearing period. It is interesting to note that as the interval between the first and second births increases, the percentage of mothers of higher parities decreases. Out of 100 women who had the lowest birth interval, i.e., 0-19 months, 57 had six or more children. This percentage increased to 61 for the birth interval of 20-39 months and then it decreased monotonically to 20 for the birth interval between the first and second births exceeding 99 months. Only five per cent of the women with a birth interval of 20-39 months had two children. It increases monotonically to 40 for a birth interval of 100 or more months. It also appears from the table that the most favourable birth interval for women who attain higher parities is 20-39 months. The x^2 test when applied to the frequencies in Table 7 gives a value of 30.24 which is highly significant at the five per cent level of significance and with eight degrees of freedom.

It is therefore significant that the first birth interval is related to the future size of the family. It may be interesting to explore the possibilities of using these intervals for the prediction of the future natality of married cohorts.

Socio-economic factors

(i) *Religion* : Table 8 gives the average interval between successive births according to religion and permanent address.

The table reveals that for all birth intervals, except the sixth one, the mean interval between subsequent births for Hindus was greater than that for Muslims. For Hindus, the mean interval for all orders of birth was 38.1 months whereas for Muslims it was 34.8 months. This is in agreement with the studies of Nag[13], Sinha[14] and Saxena[15] who have found the fertility of Muslims to be higher than that of Hindus though in the present study, the difference between the two communities is quite small. These averages, however, do not give a complete picture as there is a great deal of scattering of values around

TABLE 8

Average birth interval by religion and place of residence

	Average birth interval (in months)								
	Marriage and 1st	1st and 2nd	2nd and 3rd	3rd and 4th	4th and 5th	5th and 6th	6th and 7th	7th and 8th	Mean
Religion :									
Hindu	48.2	34.2	35.1	34.7	34.6	36.7	33.2	—	38.1
Muslim	39.8	33.6	29.3	33.1	34.5	35.9	35.1	—	34.8
All religions	47.1	34.1	34.3	34.3	34.5	33.9	33.6	—	37.4
Place of residence :									
Rural	42.7	31.7	31.7	32.4	33.8	38.3	30.7	29.5	30.2
Urban	48.7	34.9	35.1	34.9	34.8	35.8	34.4	31.9	38.6

the averages. The standard deviation of the distribution from which these averages have been calculated is between 15 to 17 months. When an analysis of variance was carried out on the mean intervals for the first seven births, the variance ratios for religion and order of birth worked out to 2.66 and 4.78 with (1,6) and (6,6) degrees of freedom respectively. While the former implies that there is no difference between the mean interval of births among the two communities, the latter suggests that order of birth has some impact on birth interval. Here the level of significance is 0.05. A close inspection of Table 8 reveals that after the first birth, the interval between consecutive births is more or less stationary both for Hindus and Muslims and the value(s) of F which is significant for order of births is only due to the interval between marriage and the first birth. When an analysis of variance is carried out for the last six orders of births, without considering this interval, the values of F for (1, 5) and (5, 5) degrees of freedom work out to 1.28 and 1.04 respectively, which are not significant.

(ii) *Place of residence :* In studies carried out in several countries, urbanization is reported to be an important factor in reducing fertility.[13] But, it leads to a lower fertility rate only if it involves a change in social arrangements towards lesser dependence on traditional family units and greater dependence on modern non-familial institutions. Otherwise, living in large population concentrations alone does not necessarily make for lower fertility. There is some evidence that in some developing countries there may be no urban-rural fertility differentials.[16]

All the people enumerated in this investigation have lived at least for six months in Patna town. However, whether a person

TABLE 9

Average birth interval by level of education of the mother and of the couple

Educational level	Average birth interval (in months)									
	Marriage and 1st	1st and 2nd	2nd and 3rd	3rd and 4th	4th and 5th	5th and 6th	6th and 7th	7th and 8th	Mean	All except first interval
Of mother :										
Illiterate	61.2	36.5	36.7	36.5	35.7	36.3	34.2	30.5	38.7	
Literate	49.3	34.7	32.1	34.1	33.2	30.3	30.2	29.9	34.5	
At least Matriculate	32.1	30.5	31.3	28.1	34.7	34.6	30.2	29.3	31.5	
Of couple :										
Both illiterate	51.7	36.7	37.9	36.7	36.9	37.6	34.5	30.6	40.3	36.7
Husband literate, wife illiterate	49.5	33.1	34.4	32.0	34.6	33.6	32.1	29.9	37.6	33.3
Both literate	43.1	34.7	35.4	38.4	33.9	36.7	38.4	29.5	37.7	35.7
Husband at least Matriculate, wife illiterate	38.7	29.9	30.5	29.4	33.0	30.8	34.6	30.6	32.6	30.8

belongs to an urban or a rural group is decided by his ecological background and his permanent residence. Classified thus, 24.5 per cent of the population are those who come from rural areas and the remaining 75.5 per cent come from urban places (Table 8). Here, in all the cases except the sixth birth, the average interval between successive births for the urban population is greater than that of the rural population..

The urban average interval for successive births is 38.6 months as against the corresponding rural average of 35.2 months. An application of the analysis of variance to Table 10 reveals that both the rural-urban differential ($F_{(1,7)} = 8.01$, $P_F < 0.05$) and the order of birth ($F_{(7,7)} = 14.27$, $P_F < 0.05$) have some impact on the mean interval of birth. But when the mean interval between marriage and the first birth is not considered and an analysis of variance is then carried out, the variance ratios come down to 5.60 and 3.16 respectively. The tabulated value of F with one and six degrees of freedom is 5.99 and for $F_{(6,6)}$ it is 13.74. Although the minor difference between the variance ratio and the tabulated value of $F_{(6,6)}$ indicates that in the case of the rural-urban differential, our hypothesis narrowly escapes from being rejected, the nature of the observation for various orders of birth suggests that perhaps rural and urban environments have some effect on spacing of births.

(iii) *Literacy*: The average interval between subsequent births according to the level of literacy of the mother as well as of the couple is depicted in Table 9. It shows that illiterate mothers had the longest average interval, followed by literate mothers, the shortest being among mothers who were at least matriculates. The respective averages for all order of births were 38.7, 34.5 and 31.5 months respectively. The interval between marriage and the first birth among illiterate mothers was 61.2 months, 49.3 months for literate mothers and only 32.1 months for those who had passed matriculation or above. The reason for such differences in the case of the first birth interval was perhaps due to the low age at marriage among the illiterate class. The difference in average intervals among the subsequent births can be attributed to the longer periods of amenorrhoea among the illiterate class than among literate women. Jain[8] observed that the period of amenorrhoea for illiterate women was 28 ± 19.9 weeks, for primary educated 28.5 ± 14.5 weeks, middle school passed, 23.4 ± 20.9, high school passed 21.7 ± 18.8 weeks, and for University educated women it was only 15.6 ± 14.5 weeks. These results clearly indicate that higher education is associated with shorter periods of amenorrhoea. Education as such may not be the direct factor but perhaps it works through the intermediate variables[17] and way of life they lead. Another possible reason for longer birth intervals among illiterate mothers may be that the birth intervals given by illiterate mothers are in round figures and perhaps not so accurate as those given by literate mothers.

To better understand the distribution of intervals the literacy level of both the father and the mother have been considered simultaneously. For the first five births and the last order of birth we again find a similar trend in that the highly educated couples have the smallest birth intervals and illiterate couples have the largest. The sixth birth exhibits the reverse. The weighted average interval for all orders of birth in the latter case is as high as 40.3 months while in the former, it is only 32.6 months.

(iv) *Monthly income*: It is interesting to note from Table 10 that there exists an inverse relationship between monthly income and average interval of births. The average birth interval among the lowest income group (Rs. 0-100) exceeded that in the higher income group (Rs. 201 and above) for all orders of births except the interval between the sixth and seventh births. A similar relationship is also evident for other income groups.

If a shorter birth interval stands for higher fertility rate, the observations of Table 10 reveal an interesting fact that people belonging to the middle class and not those who belong to the low income group generally have a higher fertility rate.

Summary and conclusion

The relationship between demographic and socio-economic factors and spacing of births was studied in 1,107 women, assumed to be belonging to a non-contraceptive population.

1. The average interval between subsequent births in younger women, married before 20, was greater than that of those married at or over 20, probably owing to differences in the time of performance of the "gawana" ceremony, observance of the *purdah* system, recall lapses and the elimination of those women from the study sample who were childless up to the date of the survey.

2. The average interval between marriage and first birth for women married at the age of 20 or more was less than half that for women who married between 5-9 years of age. Also, up to the third birth the intervals for those women married before 15 years of age was greater than that for those marrying at the age of 15, the trend being reversed for higher orders of births. Thus, the average interval between subsequent births increased with duration of marriage when

TABLE 10

Average birth intervals by monthly income of couples

Monthly income (Rs.)	Interval (in months) between								Mean	
	Marriage & 1st birth	1st & 2nd	2nd & 3rd	3rd & 4th	4th & 5th	5th & 6th	6th & 7th	7th & 8th	All births	Except 1st
0-100	48.30	33.90	34.59	35.79	34.41	37 65	34.69	30.78	38.31	34.68
101-200	44.50	34.67	35.80	30.71	35.68	34.02	27.35	30.75	36.06	33.39
201 and above	39.94	30.93	31.82	32.37	31.79	32.24	37.00	30.21	33.72	32.04

the age at marriage was controlled. These variations were perhaps due to differences in fertility levels at different ages, and varying relaxation in the rigidity of the observance of *purdah* among the older and younger generations.

3. Sex-preference and life-span of the previous child were found to play a dominating role in increasing or reducing the birth interval. The interval between two consecutive live births when the previous child is male and alive was greater than when the previous child is female and alive. Similarly, the interval between two births was reduced if the child died in infancy and specially if this was a male child. Shorter intervals could be attributed to the desire of the parents to have another child and the reduction in the length of post-partum amenorrhoea. A positive association in the intervals between different confinements was also noticed, i.e., the earlier the first birth the shorter the interval between it and the second.

4. The interval between the first and second births may be used as a good indicator of the total number of births that occur in a family —as this interval increases, the percentage of women with higher parities is found to decrease. The most favourable birth interval for women who attain higher parities was 20-39 months.

5. Religion seemed to have some impact on the spacing of births. For all births, the intervals between subsequent births were greater among Hindus than Muslims, the mean birth intervals being 28.1 and 34.8 months, respectively. The difference could be due to the difference in fertility between the two communities.

6. The consistency of data indicate some possibility of the influence of a rural-urban background on the spacing of births; the contradiction observed in the results may perhaps be due to the small size of the sample.

7. Education of the mother was positively related to spacing. The mean intervals for a matriculate and an illiterate mother were

31.5 and 38.7 months respectively. The reasons for this discrepancy could be the effect of education on intermediate variables and the fancy of illiterate masses for round figures.

8. As regards the monthly income, women belonging to the middle class had the shortest birth intervals and not those from low-income groups. The former therefore, were mainly responsible for the higher fertility rate in this group of women.

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FERTILITY DECLINE IN INDIA DURING 1961-1971

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Introduction

India was the first country in the world to adopt family planning as a part of its developmental plans as far back as 1952. The programme was intensified in 1965-66 and its impact is slowly being felt now. In other words, one can see from the available vital statistics that there are slight decreases in fertility and a rapid decline in mortality. The birth rate which was 41.7 in 1961 has come down to 37.2 per thousand population in 1972. While there are many factors which, in the recent past, have been responsible for a decline in fertility, the age distribution of the population and the fertility patterns of specific age groups may determine, by and large, the future course of Indian fertility. Besides, appreciable changes in fertility decline require major changes in the behaviour of individuals and a more favourable response from younger couples leading to an acceptance of the small family norm. In this paper, an attempt has been made to study the trends in various fertility measures and other factors affecting fertility during the 1961-1971 decade.

Trends in fertility rates

The trend in the fertility rate is subject to the limitations of available data ; the data for 1961 were based on the census estimates for that year, and for the years 1966 and 1969, were based on the Sample Registration Scheme.

Between 1961 and 1972, the crude birth rate declined by 10.8 per cent, the corresponding decline in the total fertility rate for married women being 5,620, from 5,675.

Table 1 gives the age specific fertility rates for the years 1961 and 1969.

The percentage decline in the age specific fertility rates and age specific marital fertility rates for the periods 1961-68, 1961-69, and 1968-69 for the different age groups are given in Table 2. The percentage change in the age specific fertility in the age group 15-19 years was 31.4 during 1961-68 and it increased to 38.4 in 1961-69. In

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The views expressed in this article are those of the author and not those of the organisation he belongs to.

TABLE 1

Fertility rates—1961, 1968 *and* 1969

Age group (years)	1961 ASFR	1961 ASMFR	1968 ASFR	1968 ASMFR	1969 ASFR	1969 ASMFR
15-19	159	228	109	156	98	140
20-24	289	315	251	272	262	283
25-29	267	284	273	289	267	283
30-34	206	225	224	245	226	247
35-39	140	161	172	197	158	181
40-44	74	95	82	104	77	98
45-49	—	—	40	56	36	50
	1135	1308	1151	1319	1124	1282
Total fertility rate	5675	6540	5775	6595	5620	6410

Note : 1 ASFR = Age specific fertility rates for all women

2 ASMFR = Age specific fertility rates for married women.

3 The rates for 1961 are deduced from the National Sample Survey, 14th Round (July 1958-June 1959) by adjusting to the general fertility rate of 195 per 1,000 women in the reproductive age group, (15-44) in 1961 The rates for 1968 and 1969 are from the Sample Registration Scheme of the Registrar-General of India

TABLE 2

Percentage changes in fertility rates—1961-68, 1961-69 *and* 1968-69

	1961-68		1961-1969		1968-69	
Age group (years)	% change in ASFR	% change in ASMFR	% change in ASFR	% change in ASMFR	% change in ASFR	% change in ASMFR
15-19	—31.4	—31.6	—38.4	—38.6	—10.1	—10.3
20-24	—13.1	—13.7	— 9.3	—10.2	+ 4.4	+ 4.0
25-29	+ 2.2	+ 1.8	— 0.0	— 0.4	— 2.2	— 2.1
30-34	+ 8.7	+ 8.9	+ 9.7	+ 9.8	+ 0.9	+ 0.8
35-39	+22.9	+22.4	+12.9	+12.4	— 8.1	— 8.1
40-44	+10.8	+ 9.5	+ 4.1	+ 3.2	— 6.1	— 8.1
45-49	—	—	—	—	—10.1	—10.7

ASFR = Age specific fertility rate.

ASMFR = Age specific marital fertility rate

the 25-49 age group, the age specific fertility rate was positive during 1961-68 and 1961-69, the magnitude being on the decrease during 1961-69. It is clear even from the age specific marital fertility rate that the decline during the periods 1961-68 and 1961-69 was of the order of 31.6 and 38.6 per cent respectively in the age group 15-19 and even in the space of one year that is, between 1968 and 1969, the decline was about ten per cent. One interesting feature in the percentage decline in the age specific fertility rate of all women and married women during 1968-69 is that there is a decline in the younger age groups, viz., 15-19 and 25-29 years and also in the age group of 35-49 years.

Trends in age at marriage

In the first all-India survey carried out by the Operations Research Group, Baroda, information on the ages at marriage of women of different cohorts was collected. Table 3 below gives the trend in the average ages at marriage of males and females for the period prior to 1951 and from 1951-55 to 1966-70.

TABLE 3

Average age at marriage

Year of marriage	Average age at marriage	
	Men	Women
Prior to 1951	20.0	13.0
1951-55	21.3	14.3
1956-60	21.2	15.1
1961-65	22.3	16.3
1966-70	23.8	18.0

The average age at marriage of males which stood at 20 years prior to 1951 has increased by 3.8 years in 1966-70. Similarly, the initial average age at marriage of women increased from 13 years, prior to 1951, to 18 years during 1966-70. This indicates that the difference between the ages of the spouses at the time of marriage has lessened from seven years during the period prior to 1951 to 5.8 years in 1966-70. These changes along with the information on the age specific fertility rates reveal that there is a greater fertility decline in the younger age groups as compared to older ones, this change being a direct result of family planning measures and also due in part to a rise in the age at marriage.

Births averted due to changes in age specific marital fertility rates

The age specific marital fertility rates of 1961 and 1969 when applied to the 100 million women in the reproductive age group of 15-44 years (based on the distribution of couples as on December 1972), indicate that these 100 million women would have had 24.03 million births according to the 1961 rates as compared to 22.63 millions based on 1969 rates, giving a difference of 1.4 million births. These 1.4 million births may be attributed to changes in age specific fertility rates that have taken place during 1961 and 1969.

Proportion married

The proportion of women married to the total women in the different age groups from 15 to 49 has been worked out from the 1961 and 1971 censuses respectively (Table 4).

TABLE 4

Agewise distribution of married women to total women

Age group (years)	Percentage married to total in 1961	Percentage married to total in 1971
15-19	69.6	56.3
20-24	91.8	89.4
25-29	94.2	95.6
30-34	91.4	94.5
35-39	87.0	91.7
40-44	77.7	84.5
45-49	69.7	78.5

According to Table 4, the proportion of married women in the age group 15-19 and 20-24 has declined in 1971 as compared to 1961 whereas in the age groups 25-29 onwards up to 45-49 the trend has reversed. The age group 20-24 is young and also has a high age specific marital fertility rate.

Table 5 gives the cumulative percentage of births to married women at different age groups during the reproductive period. It

TABLE 5

Cumulative percentage of births to married women at different ages

Age group (years)	Number of married women as on Dec '72 (000)	ASMFR		% of cumulative births upto the age group	
		1961	1969	1961	1969
15-19	15,273	229	140	14.49	9.45
20-24	22,626	315	283	44.16	37.75
25-29	22,060	284	283	70.23	65.34
30-34	17,535	225	247	86.65	84.49
35-39	13,575	161	181	95.75	95.35
40-44	10,747	95	98	100.00	100.00
Total	1,01,816				

Note : 1. ASMFR = Age specific marital fertility rate.

2. The rates for 1961 are deduced from the National Sample Survey, 14th Round (July 1958-June 1959) by adjusting to the general fertility rate of 195 per 1,000 women as in 1961 in the reproductive age group (15-44). The rates for 1969 are from the Sample Registration Scheme of the Registrar-General of India.

shows that women belonging to the 15 to 19 age group account for nearly 9.4 per cent of all births in 1969. Also, the percentages of cumulative births upto 35-39 years are on the decline in 1969 as compared to those in 1961 whereas the difference is negligible in the 35-39 age group.

The prospects for the birth rate continuing to decline will be more problematic when (i) the age distribution begins to change to one conducive to higher birth rates, and (ii) most of the changes in birth rate in the higher age groups have already occurred and further major changes required in the basic values concerning the small family size and corresponding changes in the behaviour among younger groups, may be difficult. The number of women (in absolute numbers) is consistently higher in 1971 as compared to 1961 in all the age groups though the percentage of women to the total population, more or less remained the same in 1961 and 1971 (Table 6). The percentage of women aged 15-44 to the total population in 1961 and 1971 shows that between 20 and 34 years the percentages are higher in 1961 as compared to 1971 whereas in other age groups there are slight fluctuations. All the abovementioned factors discussed so far do indicate that rapid changes in fertility decline in the short run may not be certain but in the long run, e.g., over a decade, such changes have certainly taken place.

TABLE 6

Age-wise distribution of women as percentages of total population and of women aged 15-49 *years*—1961 *and* 1971

Age group (years)	Number of women 1961	Number of women 1971	No. of women as % of total population 1961	No. of women as % of total population 1971	% of women 15-49 years 1961	% of women 15-49 years 1971
15-19	17,283,838	22,294,000	3.9	4.1	17.3	18.3
20-24	19,133,698	21,614,100	4.4	3.9	19.1	17.8
25-29	18,049,551	20,539,400	4.1	3.7	18.0	16.9
30-34	14,854,603	17,946,300	3 4	3.3	14.8	14.7
35-39	11,860,362	15,678,300	2.7	2.9	11.8	12.9
40-44	10,773,683	13,254,600	2.5	2.4	10.7	10.9
45-49	8,322,495	10,374,000	1.9	1.9	8.3	8.5
Total	1,00,278,230	1,21,701,600	22.8	22.2	100.0	100.0

Total population of India in 1961 = 438,936,918
Total population of India in 1971 = 547,949,809

Conclusion

In summary it may be mentioned that (i) all the fertility indices like the crude birth rate, age specific fertility rate and total fertility rate have all shown a decline during the period 1961-69. (ii) The average age at marriage has also registered an increase in the case of both men and women. The number of years of increase prior to the period 1951 upto 1966-70, in case of males was 3.8 years and in case of females 5.0 years. The difference in the ages at marriage between husband and wife has decreased from 7.0 years to 5.8 years during the same period. (iii) The proportion of females married among the total females has declined in the younger age group, i.e., 15 to 19 and 20-24 and the age group 20-24 also has a higher fertility rate. (iv) The percentage of cumulative births in the different age groups from 15-19 years to 30-34 years has shown a decline in 1969 as compared to 1961 whereas in the age group 35-39 and 40-44 there has not been much of a difference.

All the above observations, subject to limitations of the data, indicate that a decline in fertility is taking place in the age groups 15-19 and 20-24 which may well be due to family planning measures and partly due to the other factors like a rise in the average age at marriage.

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A STUDY OF WOMEN WHO HAVE UNDERGONE TUBAL LIGATION

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Introduction

In April 1970, the Family Planning Training and Research Centre, Bombay, selected the Khetwadi area in the immediate vicinity of the Centre as a field practice and demonstration area for its training programmes.

Khetwadi is one of the oldest parts of Bombay city and is inhabited by people belonging to various castes and communities, who speak different languages, practise various professions and belong to different socio-economic groups.

The population of the area according to the 1971 census was 80,131.

The area has 15 lanes and is overcrowded. It is a residential as well as a busy commercial area. The residential buildings of the area are multistoreyed and at times as many as five hundred families live in one building.

Out of the 15 lanes, ten lanes which are close to the centre, were selected for a preliminary survey in 1970-71 in order to find out the number of users and non-users of family planning methods, the comparative popularity of various methods of conception control, the average number of living children per couple and the impact of the Centre's programmes on the people in this area. The data collected from 2,065 couples when analysed revealed that as many as 397 (20.5%) had undergone tubal ligation which seemed to be the most popular method of family planning among this population; only 1.6% of the men had undergone vasectomy and 14.5% of the couples were using other methods of family planning. A good number of these women who had one to two children remarked during the interviews that they would eventually undergo tubal ligation after completing the desired family size, i.e., 2 or 3 children. This showed the high degree of motivation among the women of this area for the method. It was observed that many of the women had undergone tubal ligation as far back as 1956 whereas the official programme for tubal ligation in Maharashtra gained momentum only in the later half of 1967*.

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* Family Welfare and Planning, Maharashtra State, 1957-58, Programme and Policies.

It was felt worthwhile to investigate the factors responsible for influencing these women to adopt this permanent method of fertility control at the time when they did so with a view to utilising this knowledge for motivating couples in other areas for tubal ligation.

Of the 2,605 couples in the area, no information could be collected from 127 couples. Among the remaining 1,938 couples, there were 1,062 (54.8%) closed cases and 876 (45.2%) eligible couples. The former consisted of 479 (24.7%) menopausal women, 397 (20.5%) cases of tubal ligation, 30 (1.6%) vasectomy cases and 156 (8.0%) widowed or separated cases. Of the 876 eligible couples, as many as 595 (30.7%) were non-users and 281 (14.5%) used contraceptives—13 (0.7%) IUD, 51 (2.6%) oral contraceptives, 102 (5.3%) conventional contraceptives and 115 (5.9%) used the withdrawal method. Among the non-users, 67 (3.5%) were cases of primary infertility and 49 (2.5%) of secondary infertility and the rest 479 (24.7%) were categorised as "high priority" couples. Of these latter, 293 (15.1%) were "immediate" high priority couples and 186 (9.6%) were "future" high priority couples, comprising 84 (4.3%) pregnant women, 81 (4.2%) who were married for less that two years and desiring a pregnancy and 21 (1.1%) who were below 25 years of age, married any length of time, never pregnant and desiring a pregnancy.

Methodology

The women who had accepted tubal ligation were interviewed with the help of a questionaire (Appendix) which was pre-tested on ten operated women from the area who have not been included in the study. The interviews were taken by three public health nurses of the Centre, and were commenced from April 1972. Each worker was briefed on the filling up of forms and interviewed four cases a day, devoting at least half an hour per case. Although attempts were made to contact all the 397 operated cases, only 276 could be contacted.

The data collected by the interviewers included demographic characteristics like present age, age of the couple at the time of operation, educational level, income, parity, and the number and sex of living children. The reasons for their accepting tubectomy as against the vasectomy operation by their husband were also studied.

Results

Present age : The ages of the women lay in the 23 to 48 + range while that of their husbands were between 28 and 48 + years. The majority of the women (33%) were between 38 and 42 years followed by 22.5% in the 33 to 37 age-group, 17% in the 28 to 32 age group, 14.5% in the 43 to 47 age group, 9% who were 48 years or more and 4% below 28 years of age.

Age at the time of operation: Table 1 gives a distribution of the women and their husbands according to their ages at the time of the operation. It is clear from the table that 76.5 per cent of the cases were operated upon before they attained the age of 32, i.e., in the earlier half of the reproductive period. As many as 34.8 per cent were under 27 at the time of operation, indicating the high incidence of motivation at a comparatively lower age among them. The mean age of the wives at operation was 29.7 years.

TABLE 1

Age of the couple at the time of operation

Age (years)	Wife	Husband
22 and below	13 (4.7)	—
23-27	83 (30.1)	17 (6.2)
28-32	115 (41.7)	66 (23.9)
33-37	53 (19.2)	90 (32.6)
38-42	10 (3.6)	62 (22.5)
43-47	2 (0.7)	24 (8.7)
48 and above	— —	14 (5.1)
Not reported	— —	3 (1.1)
Total	276 (100.)	276 (100.1)

* Figures in parentheses represent percentages.

Year of operation: Of the 276 women, 65.9 per cent had undergone tubectomy prior to 1967, i.e., before the sterilisation programme had gained momentum in Maharashtra State. Also, 89.8 per cent of the women had been operated upon at the time of delivery while the rest (10.2%) were non-puerperal operations. Of the latter group, 4.7 per cent were elective, i.e., the only operation performed was tubal ligation, while 5.5 per cent were incidental operations, sterilisation being done while some other operation was performed.

Place of operation: As many as 74.6 per cent of the women were operated in private hospitals (47.1%) or private nursing homes (27.5%) where they had to pay for the delivery and the sterilisation, whereas 21.7 per cent went to Municipal Nursing Homes or government hospitals, where the services were free of charge, or the charges were nominal. The remaining 3.6 per cent were operated outside Bombay. Although the women had to pay Rs. 150 or more for their delivery and operation in private nursing homes, they preferred these rather than government or Municipal hospitals, because of the good care, comfort and especially, the closer personal attention given by the private physician which helped the patient to feel confident about the operation. Every family in this locality had a great deal of faith in their private physician whom they consult on any matter related to health or family planning before taking independent decisions.

Education : Table 2 gives the educational status of the couple. It shows that the level of literacy was higher among the husbands—while about 15 per cent of the women were illiterate, only 2 5 per cent of the husbands belonged to this group.

TABLE 2

Educational status of the couple

Educational level	Wife		Husband	
Illiterate	42	(15.2)	7	(2.5)
Std. I-V	122	(44.2)	65	(23.5)
Std. VI-X	94	(34.0)	90	(32.6)
Matriculate	17	(6.2)	97	(35.1)
Graduate	1	(0.4)	12	(4.4)
Post-graduate	—	—	2	(0.7)
Not reported	—	—	3	(1.1)
Total	276	(100.0)	276	(99.9)

Figures in parentheses represent percentages.

Occupation : The occupations of both the wife and the husband were recorded, and except for three women, the rest were found to be housewives. Among the men, 35.5 per cent were engaged in business, 13.8 per cent were tradesmen, 14.9 per cent white collar workers, 3.3 per cent office executives, 17.4 per cent skilled workers, 10.1 per cent manual labourers, 2.2 per cent engineers or doctors, 2.5 per cent had retired from service and the occupation of the remaining 0.4 per cent was not recorded.

Income : The monthly income of the husband or the family, in case of a joint family, is recorded in Table 3. The locality chosen for the study was observed to be inhabited mostly by the lower and middle-income groups of people, about a third of the sample being engaged in business. Only 19 per cent of the families were found to earn over Rs. 600 per month.

TABLE 3

Monthly income of husband/joint family

Monthly income (Rs.)*	Of husband	Of joint family
100-200	50 (18.1)	2 (0.7)
201-300	53 (19.2)	— —
301-400	45 (16.3)	2 (0.7)
401-500	30 (10.9)	3 (1.1)
501-600	21 (7.6)	1 (0.4)
601 and above	51 (18.5)	1 (0.4)
Not reported	17 (6.2)	— —
Total	267 (96.8)	9 (3.3)

* Figures in parentheses represent percentages.

Religion: Only two religions were represented in the sample—religionwise, 99.3 per cent were Hindus and 0.7 per cent were Parsis. About 65.3 per cent could speak Gujarati, 28.6 per cent Marathi and 6.1 per cent could speak Hindi, Konkani or Telugu. In general, about 66 per cent of the women could speak more than one language and 52 per cent, more than two languages.

Parity: The majority (46.4%) of the women opted for tubal ligation after their fourth or fifth pregnancy. About 17.4 per cent accepted the operation after two to three children, 27.9 per cent after six to eight children and the rest (8.3%) after nine or more pregnancies.

Out of the total of 276, only 86 (31.2%) reported to have had abortions, of which four were induced and 82 spontaneous. These figures cannot, however, be relied upon as many women were reluctant to disclose that they had had an induced abortion.

Number of living children: The number of living children both at the time when tubal ligation was considered as well as when the women actually underwent the operation is given in Table 4. For the latter period, the table also gives a sex-wise distribution of the living children.

TABLE 4

Number of living children when tubal ligation was thought of and at the time of the actual operation

Number of living children	At the time operation was thought of	At the time of operation, number of couples having		
	Number of couples	Living children	Living boys	Living girls
0	—	—	3 (1.1)	30 (10.9)
1	2 (0.7)	—	40 (14.5)	94 (34.1)
2	30 (10.9)	15 (5.4)	115 (41.7)	74 (26.8)
3	100 (36.2)	68 (24.6)	84 (30.4)	50 (18.1)
4	71 (25.7)	93 (33.7)	23 (8.3)	23 (8.3)
5	35 (12.7)	48 (17.4)	7 (2.5)	5 (1.8)
6	19 (6.9)	35 (12.7)	4 (1.5)	— —
7	15* (5.4)	12 (4.4)	—	— —
8	—	5 (1.8)	—	— —
Not recorded	4 (1.5)	—	—	— —
Total	276 (100.0)	276 (100.0)	276 (100.0)	276 (100.0)

* 7 or 7+.
Figures in parentheses represent percentages.

It was observed that 47.8 per cent of the women thought of getting a tubal ligation done after having had upto three children whereas only 30 per cent of them actually underwent the operation when they had three or less children, a difference of 17.8 per cent. On the other hand, 38.4 per cent of the women thought of having the operation when they had four to five living children, but 51.1 per cent actually underwent the operation after having achieved this family size. The average number of living children per couple at the time of operation was 4.3.

It may be recalled that 65.9 per cent of the women were operated in or before 1967 when the emphasis was not so much on limitation after two or three children. It is, therefore, possible that though the women thought of the operation when they had fewer children, they actually underwent the operation after they had had more than the number decided upon earlier. It is possible that, as tubal ligation was not generally considered a reversible operation, it was not encouraged before the third child by their private physicians in whom these women have a great deal of faith.

Considering the number of living boys and living girls per couple at the time of operation (Table 4) it is interesting to note that only one per cent of the women underwent the operation in spite of having no living sons while almost 11 per cent got operated in spite of having no living daughters. In other words, the majority of the women wanted two to three living boys before they actually underwent the operation but as far as daughters were concerned, the majority of the women were satisfied with one or two.

In this connection, an attempt was made to find out how many sons and daughters were considered necessary prior to undergoing the operation. However, the majority of the women said that they had not given any thought to this.

All those women who had four or more children were asked the reason(s) for not undergoing the operation earlier. Various reasons were given by the women (Table 5). About 31.1 per cent of the women expressed the desire for more sons or more daughters or more children in the family. It is likely that in 18 per cent of the cases, where the husband or his relatives were at first against the operation, they were afraid of the possible ill-effects and were only later con-

TABLE 5

Reasons for undergoing tubal ligation only after four or more children

Reasons given	Number of women
No son or daughter in the family	16 (8.3)
Wanted more than one son	16 (8.3)
Wanted four or more children	28 (14.5)
Husband or his relatives against the operation	35 (18.1)
Ill-health of husband, wife or child	14 (7.3)
Had no knowledge about sterilisation	25 (13.0)
No facilities for operation	22 (11.4)
Natural spacing	2 (1.0)
Not recorded	35 (18.1)
Total	193 (100.0)

* Figures in parentheses represent percentages.

vinced by those who had undergone the operation without having had any side-effects.

Methods practised prior to accepting tubal ligation:

The other methods of family planning which were being practised by the couples before the women accepted tubal ligation were-conventional contraceptives by 16.7 per cent and IUDs and oral contraceptives by 1.8 per cent each, while the majority of the women said that they had not used any method prior to the operation. However, on probing further, many admitted that the withdrawal method was practised by their husbands at various periods. A common misconception among the people is that the withdrawal method is not a method of family planning and, therefore, they do not mention the method unless specifically asked about it.

When asked whether they had complete knowledge about the operation including awareness about its irreversibility, 96 per cent of them answered in the affirmative and only 4 per cent said that they were not aware of the fact.

Reasons for undergoing tubal ligation:

Among the different reasons for undergoing tubal ligation as shown in Table 6 the maximum number of women, (82 or 29.7%) said that they were satisfied with the number of children they had. Most of these women were well off financially. Those who said that they were keen to have a small family had undergone the operation for their personal convenience. Others had specific reasons for under-

TABLE 6

Reasons for undergoing tubal ligation

Reasons	Number of women
Satisfied with the number of children she had	82
Ill-health of wife	70
Poor financial condition	51
Inability to look after more children	48
Difficult and prolonged labour	34
Keenness to have small family	30
Multiparity	11
Short spacing	7
Not recorded	2

going the operation such as ill-health, difficult labour or poor financial conditions. Many women gave more than one reason.

Structure of family:

A question regarding the structure of the family at the time of operation was asked to find out whether the women lived in a joint family or a nuclear family. It was found that 64.5 per cent came from nuclear families and only 35.5 per cent from joint families. However, the women stated that even if they lived in nuclear families, at the time of delivery, their relatives come forward to look after the older children who are at home. It has already been mentioned earlier that 89.8 per cent of the women were operated upon at the time of delivery.

Reasons for not preferring vasectomy:

An initial survey of the area showed that out of the 1,938 couples surveyed, only 30 or 1.6% of the men had undergone vasectomy in spite of the fact that in Maharashtra, maximum emphasis has been placed on this method since 1960. Various reasons were given by the women for preferring tubal ligation to vasectomy as shown in Table 7. About 25 per cent of these women said that their husbands or relatives were against vasectomy and an equal number expressed their preference for the operation on themselves because they are housewives and can take sufficient rest after the operation while they

TABLE 7

Reasons for not preferring vasectomy

Reasons	Number of women
Husband or his relatives against vasectomy	70 (25.4)
Preferred her own operation	70 (25.4)
Not heard of vasectomy	40 (14.5)
Ill-health of husband	26 (9.4)
Tubal ligation done secondary to some other operation	24 (8.7)
Popularity of tubal ligation in the locality	19 (6.9)
Vasectomy not favoured in the community	12 (4.4)
Not recorded	15 (5.4)
Total	276 (100.1)

* Figures in parentheses represent percentages

did not want their husbands who were the sole earning members to undergo any physical pain or inconvenience.

About 14.5 per cent of these women said that they had not heard of vasectomy. A small percentage (6.9%) said that they had selected tubal ligation as it was the most popular method in their locality.

Motivating agent:

An effort was made to find out from the women the agent actually responsible for convincing them to accept tubal ligation. About 25.4 per cent of the women mentioned hospitals or private nursing homes where they had had their deliveries as the responsible agent. It is understandable that the doctors or nurses who have attended to them during labour and have gained their confidence play an important role in helping them to make their decisions. This was expressed by 6.2 per cent of the women who considered the family doctor as the motivating agent. Also, the family planning clinic was responsible for motivating 2.9 per cent of the women and books and magazines, about 1.8 per cent. While 21.7 per cent of the husbands encouraged them to undergo the operation, only 11.6 per cent mentioned that a relative, friend or neighbour was responsible for convincing them to accept the operation. The majority, (30.4%) could not pin-point the agent responsible but said that they were self motivated. Perhaps these women have been under various influences such as listening to family planning programmes on the radio, seeing posters, reading magazines and talking to relatives and friends, and gradually all these agents helped them to make up their minds.

In the case of the 32 women who were motivated by a female friend, relative or neighbour, a question was asked whether the motivator was herself operated. It was found that 24 out of the 32 motivators had themselves undergone tubal ligation.

As many as 52.9 per cent of the operated women claimed to have motivated other women to undergo sterilisation, one of them claiming to have convinced nine other women. Also, 56.2 per cent said that they were actively engaged in motivating others to accept the method.

After-effects:

Among the after-effects of the operation, the majority of the women, (56.9%) had no complaint. While 27.5 per cent said they felt better physically or mentally, only a small percentage (15.6%) complained of backache, weakness or gain in weight following the operation.

When the women were asked whether they experienced any difference in sexual relations following tubal ligation, 97.1 per cent commented that there was no difference. While 0.7 per cent said that sexual relations were more satisfactory, 1.8 per cent said they were less satisfactory and the rest did not reply. However, the women were found to be rather reluctant and shy to reply to this question.

Out of the total of 276 cases, only three couples and three women repented having undergone the operation. Of these, two couples has lost a child and one couple gave no reason while two women wanted more children and one had not been keeping well after the operation.

Conclusions

The following conclusions were drawn from the study:

1. As Khetwadi area is mainly inhabited by Gujaratis, there is a common link between the people as regards ideas and social customs.
2. In multi-storeyed buildings, the message spreads fast. If a woman has no complaint after tubal ligation, this itself becomes a motivating factor for her neighbours, relatives and friends.
3. There is a strong awareness in the locality about family planning and the people here are interested in raising their standard of living.
4. Most of the private physicians in the locality are Gujaratis and they have their own private nursing homes providing facilities for delivery as well as for sterilisation. The private physicians here are carrying out a large number of tubal ligations in their nursing homes.
5. This community is mainly a middle class one and can afford to pay for deliveries in private institutions. Repeated contacts with doctors and paramedical staff help the women to take decisions about accepting tubal ligation.
6. The idea of restricting the size of the family comes after the second or third child but it takes some time for the couple to make a definite decision and take action accordingly.
7. Once a couple decides to undergo sterilisation after a certain number of living children, they do not bother to use other methods of family planning.
8. Most of the couples prefer to have four or more children before undergoing tubal ligation provided they have two or more living sons. As far as daughters are concerned, they are happy even with one. Thus the number of sons in the family is an important factor in a couple's decision to adopt a permanent method of family planning.

9. Although the majority of the women are literate and under the influence of an urban environment they are still rather orthodox in certain respects. On the whole, they do not approve of vasectomy as they feel this causes pain and inconvenience to their husbands. They do not mind any pain or inconvenience associated with tubal ligation to themselves.
10. Most of the operated women after realising the value of the operation start motivating others and thus the information about tubal ligation spreads in the locality.

It has been observed from this study that there exists a time lag between the desire to have a certain number of living children and the actual number of living children a couple has before they decide to undergo sterilisation. It is, therefore, necessary that every couple is exposed to the idea of family spacing and limitation right from the time of marriage. Even if a woman has only one child the family planning worker—medical or paramedical—should start preparing her mentally for limitation after the second or third child, in order to avoid unnecessary delay.

Private physicians exert an important influence on the women under their care and can be actively involved in the programme by the family planning centres and family planning workers.

Due recognition should be given to each satisfied operated case as she can act as a strong motivating factor in influencing her friends, relatives or neighbours.

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APPENDIX

GOVERNMENT OF INDIA
FAMILY PLANNING TRAINING & RESEARCH CENTRE
BOMBAY (APPENDIX NO. 1)

Form for study of cases from Khetwadi who have undergone tubal ligation

Sr. No. :

A (1)	Wife	Husband
(a) Name		
(b) Age		
(c) Education		
(d) Occupation		

(2) Address :

(3) Religion :

Hindu ☐
Christian ☐
Muslim ☐
Parsi ☐
Any other (specify) ☐

(4) Languages spoken : (specify Main Language)

Marathi ☐
Gujarati ☐
Hindi ☐
English ☐
Any other (specify) ☐

(5) Monthly Income

	Wife	Husband	Joint
Rs. 100 - 200			
Rs. 201 - 300			
Rs. 301 - 400			
Rs. 401 - 500			
Rs. 501 - 600			
Rs. 601 & above			

B

(6) Date of tubal ligation:

(7) (a) Parity at the time of operation

(b) No. of abortions: Induced ☐ Spontaneous ☐

(8) No. of living children at the time of operation

No. of Boys ☐

No. of Girls ☐

(9) (a) Was tubal ligation done at the time of delivery?

Yes ☐ No ☐

(b) If no, was the tubal ligation elective or incidental to some other operation?

Elective ☐ Incidental ☐

(c) Mention the name of place where done.

(10) (a) After how many living children did you start thinking about tubal ligation?

1
2
3
4
5
6
More (specify)

(b) If after 4 or more, why so late?

(11) Did you consider it necessary to have a son/daughter before undergoing tubal ligation?

Daughter Yes ☐ No ☐

Son Yes ☐ No ☐

If yes, how many

1
2
3
4
More (specify)

(12) Did you or your husband practise any method of family planning before undergoing tubal ligation?

(1) Condom
(2) Diaphragm
(3) IUD
(4) O.C.
(5) Withdrawal
(6) Abstinence
(7) Rhythm method
(8) Other (specify)
(9) None

(13) Were you aware that this operation is irreversible and you could not have any more children after it?

Yes ☐ No ☐

(14) Why did you and your husband not prefer vasectomy to tubal ligation when the former operation is a much simpler one?

C

(15) Structure of the family at the time of operation:

Nuclear ☐ Joint ☐

(16) What was the reason which helped you to make up your mind for tubal ligation?

(17) Who was the person actually responsible for convincing you to undergo tubal ligation?

(1) Husband	(2) Mother	(3) Mother-in-law
(4) Other relatives (specify)	(5) Friend	(6) Neighbour
(7) Family doctor	(8) F.P. Clinic	(9) Hospital or Nursing home
(10) Social worker	(11) Books, pamphlets or magazines	(12) Other (specify)

(18) (a) In the case of a female motivator, was she herself operated?

Yes ☐ No ☐

(b) Mention place of operation

D

(19) Did you feel any different after the operation?

(20) (a) Did you ever regret having undergone tubal ligation?

Yes ☐ No ☐

(b) If yes, why?

(c) Did your husband ever regret your having undergone tubal ligation?

Yes ☐ No ☐

(d) If yes, why?

(21) Are your sexual relations with your husband—
(a) The same as before tubal ligation
(b) More satisfactory
(c) Less satisfactory

(22) (a) Have you motivated any of your friends or relatives for tubal ligation?

Yes ☐ No ☐

(b) If yes, how many women have undergone tubal ligation so far as a result of your motivation?

(c) If not, why not?

(23) Are you still motivating for tubal ligation?

Yes ☐ No ☐

If not, why not?

Signature
Date

NEWS & NOTES

THE ABORTION ACT IN GREAT BRITAIN

Abortion deaths have fallen by half in Great Britain since April 1968 when the Abortion Act came into effect. In London, hospital emergency admissions for abortion deaths have fallen both in total numbers and as a proportion of all female admissions, and early abortion has been shown to be a great deal safer than childbirth. This has been reported in *Abortion Now*, a newsletter of the Abortion Law Reform Association (Winter 1973, No. 2, Edition 2).

It can be assumed, states the Report, that "the fall in deaths and in emergency admissions also reflect a fall in the number of illegal abortions, especially when the reduction in prosecutions for illegal abortion is also considered.

"Due to the rapid development of the non-profit making charities, there is now very much less exploitation of women than previously. In 1972, only 15 per cent (18,000) of the total number of abortions carried out in England, Wales and Scotland on resident women (115,000) were performed in the commercial sector of private medicine. Even in this sector, which is now chiefly concerned with providing abortion for foreign patients, there is less profiteering than before. Despite inflation, and in a period in which virtually all medical and other charges and costs have risen sharply, the fees for abortion in private nursing homes are now no more than they were five years ago: in some cases they are very much less."

Although more women now come from abroad to obtain legal and safe abortions in England (50,000 in 1972) this is unlikely to be a permanent feature of the abortion scene. The countries from which they come are already changing their laws. As others follow Britain's example, total figures here may be expected to drop.

While it is true that the Abortion Act may be partly responsible for the shortage of "eligible" babies to adopt, it had improved the situation for those of mixed parentage, older children and even handicapped children. Previously, they had little chance of permanent family homes. Now, the continuing high number of adoption orders suggests that these children are increasingly acceptable.

Opinions :

National Opinion Polls Limited carried out surveys of general practitioners and electors throughout Great Britain in September 1973 to study their attitudes to the working of the Abortion Act, 1967, which was passed in April 1968 and has been in operation for over five years in that country.

The GPs' survey was carried out by posting a questionnaire to a systematic random sample of 2,070 of the approximate 22,800 National Health Service GPs. The questionnaires which elicited a response rate of 59 per cent indicated that 73 per cent of the GPs in Great Britain favour retention of the 1967 Abortion Act in its present form, or a relaxation of the law to make it easier to obtain legal abortion. Also the majority of the GPs (61%) consider existing facilities adequate for obtaining legal abortions for their patients; one-third, however, consider them inadequate. Sixty-three per cent feel that special arrangements should be made for legal abortions under the NHS in areas where obtaining these is made difficult by the attitudes of local doctors.

The survey of electors used a systematic probability sample, interviews being carried out with 1,775 electors whose names were drawn from 100 representative parliamentary constituencies througout Great Britain. The findings indicated that three-quarters (75%) of the electorate think that the Abortion Act is right to allow legal abortion when there is a risk of a child being born seriously deformed, two-thirds (68%), if the pregnancy may damage the woman's physical or mental health, while the majority (54%) think it right if the pregnancy may damage the health of an existing family. Again, fewer people now think that the Act should be changed to make it more difficult to obtain legal abortions than in 1972; the proportion having dropped from 44 to 34 per cent. Almost two-thirds (63%) of electors think that the NHS should make special arrangements in areas where at present it is difficult to obtain legal abortions.

VI ASIAN CONGRESS IN OBSTETRICS AND GYNAECOLOGY

The Sixth Asian Congress in Obstetrics and Gynaecology will be held in Kuala Lumpur, Malaysia, from 20-27 July, 1974.

The Congress will discuss nutrition and maternal health, the influence of obstetric services on perinatal health, family planning communication aspects and recent advances, recent progress in female genital cancer with special reference to epidemiological factors, and placental dysfunction.

The Organising Committee has extended a cordial invitation to all obstetricians and gynaecologists to attend the Congress.

Further information about the Congress may be had from Prof. I. S. Puvar, Organising Secretary, 6th Asian Congress in Obstetrics and Gynaecology, University Hospital, Kuala Lumpur, Malaysia.

RECOMMENDATIONS : COMMISSION ON POPULATION GROWTH AND AMERICAN FUTURE

The U.S. Commission on Population Growth and the American Future, chaired by John D. Rockefeller, 3rd, concluded in April 1973, after two years of comprehensive study that "no substantial benefits will result from the continued growth of our population. . . . On the contrary, it is our view that population growth of the current magnitude has aggravated many of the nations' problems and made their solution more difficult".

In addition to the overall conclusion that the U.S. should "welcome and plan for a stabilised population", the Commission specifically recommended :

Population education : a federal Population Education Act to assist schools in curriculum development ; sex education programmes available through schools, community organisations, and the media.

Family planning : expanded planning services for all Americans as well as improved prenatal and paediatric care, voluntary sterilisation ; increased research funds to find better contraceptives.

Abortion : liberalisation of restrictive abortion statutes on the model of the New York law ; inclusion of abortion services in federally subsidised and health insurance programmes with the admonition that abortion not be considered the primary means of fertility control.

Children's rights : adequate day care services ; elimination of discrimination against children born out of wedlock ; reform of adoption laws.

Women's rights : adoption of the Equal Rights Amendment ; alternative roles for women besides childbearing.

Population distribution and migration : national guidelines to assist regional, state and local planning and development ; channelling of rural migration away from larger or smaller centres ; no increase in legal immigration ; relocation programmes to improve job access ; comprehensive planning and coordination of land use and public facilities by local governments ; reduction of racial and economic segregation in residential location and extended suburban housing for law and moderate income and social data.

New Federal Government Organisations : an Office of Population Growth and Distribution in the Executive office of the President ; a National Institute of Population Sciences in NIH.

BOOK REVIEW

Clinics, Contraception and Communication Evaluation Studies of Family Planning Programmes in Four Latin American Countries,

by J. Mayone Stycos with Alan B. Keller, Parker G. Marden, Anthony Marino, Axel I. Mundigo and Alan B. Simmons, published by Appleton-Century-Crofts Educational Division, Meredith Corporation, in connection with the International Population Programme, Cornell University, in association with the International Planned Parenthood Federation, Western Hemisphere, pp. 207.

The family planning programme in Latin America is thirteen years old and there are at present family planning clinics in all the four Latin American countries. The book is a collection of evaluation studies of family planning programmes in the four Latin American countries of Colombia, the Dominican Republic, Honduras and Mexico and consists of six chapters contributed by specialists in population, behavioural sciences and allied fields.

In the first chapter, J. Mayone Stycos gives an over-view of the family planning programme in Latin American countries and briefly discusses the findings contained in the remaining five chapters of the book. He has made a few suggestions to improve the quality and effectivity of the programme and new areas of further research are also mentioned. He suggests, "To move in the directions suggested as necessary to affect national birth rates will require the combined efforts of government and private programmes. It will be the latter especially that should lead the way in the design and evaluation of new approaches, which, if successful, could eventually be adopted by governments. In this way the studies made in family planning in the 1970s might equal those made in the 1960s".

Drop out in family planning programmes constitute one of the major problems experienced by newly started family planning projects. Alan B. Keller discusses, in Chapter II, the various aspects of patients' discontinuation of different family planning methods. He gives an analysis of a study of 5,381 cases selected from the five oldest and largest clinics of the Federal District (Mexico City). A further study was conducted "to investigate the causes, results and consequences of desertion" and 1,848 deserters and 222 active cases were randomly selected from the 5,381 cases coded in the clinics for the follow-up interviews. The findings of this study are quite interesting: (i) "Only 20 per cent of the sample had had any previous experience with effective contraceptive methods. (ii) Although demographically the patients are quite representative of lower income Mexico City women in the appropriate age-range, one important group is underrepresented in the clinic population—low parity women of any age." (iii) Most desertion occurred initially and diminished rapidly over time. (iv) Ambivalance about having more children was characteristic even among rather high parity and relatively highly motivated women. (v) Desertion may be both a function of low motivation and unpleasant clinic or method experience. (vi) Inadequate or inaccurate information about contraception leads to desertion. (vii) Lack of communication between spouses bears a rather strong relationship to desertion."

The findings of this study would have been more convincing and meaningful if a few case-studies would have been conducted and their results included in this study.

Knowledge of and attitude towards contraception determine the decision-making process concerning health and family planning. This process is supported and strengthened by the educational campaign using the mass media. The latter influences the demand for contraceptive services in different strata of society.

J. Mayone Stycos and Parker G. Marden discuss, in Chapter III, the findings of a research project conducted in four contiguous barrios in the north-west of Comayaguela, which form the capital district of Honduras together with it larger twin city of Tegucigalpa. In this project data was collected on basic information from a sample of 422 households. Two other samples of 425 households each, were contacted to test the hypotheses on the use of mass media in disseminating health and family planning information. The first study of 422 households gives findings about the physical environment—housing and nature of problems faced by barrio residents and social environment—discussion and decision in families, nature of social life, demographic features, health problems and attitudes towards services of health centres and observations made by the researcher working within the Health Centre. The second part of the research project was designed to answer questions relating to the reach of mass media, comprehension of the message by low income, poorly educated populations of largely rural origin and the consequent change in their behaviour. To find out answers for the communication questions, pre- and post-campaign interviews were conducted for 375 and 328 women respectively. The project findings indicate a definite increase in the respondents' knowledge about family planning services and a positive change in attitudes towards small families.

The following conclusions from the communications campaign and community study are worth noting:

(i) Short-run, intensive family planning campaigns are feasible in a Latin American country. (ii) They are relatively economical. (iii) They can be effective even among poorly educated slum dwellers. (iv) The radio appears to be the most effective agent. (v) Younger women are ideal for family planning information via the mass media. (vi) Patients with low initiative for family planning are discouraged by organisational deficiencies in the clinic. (vii) A heterogenous population requires a multi-faceted approach to community educational efforts. (viii) Both the Health Centre and the clinic are viewed more as a curative service rather than as a preventive one. (ix) Family planning programmes will profit from any successful effort to mobilize the community in its own behalf on a wide variety of issues.

All these conclusions are useful and interesting from the point of view of a family planning programme administrator, family planning communicator and family planning policy maker. They reiterate what has been found in other family planning programmes. The clinic is a centre of activities in the family planning programme. It acts as a link between the administrators and the community. The working of the clinic shows the quality of the family planning programme.

Axel I. Mundigo, in Chapter IV, 'Honduras Revisited: The clinic and its clientele' gives an analysis of research findings of clinic performance in areas of patient characteristics, follow-up study of dropped out cases of one clinic and a time and motion study of clinic activities. The first 800 women enrolling for the first time at four Tegucigalpa clinics in January and February 1970 were selected for this study. The findings of this study are quite interesting, instructive to family planning clinic workers and useful to programme administrators. Pertinent suggestions to improve the clinic services were offered by the interviewed women. The author does not mention whether the suggestions offered were by a majority or high percentage of interviewed women. That would have shown the extent of satisfaction or dissatisfaction of the interviewed women towards the family planning services. The author's observation is quite apt in regard to improving the quality of the programme: "A much greater effort is needed in both clinic organisation and outside information and education to successfully reinforce the motivation of family planners, to improve their family planning knowledge and finally to keep them in the programme."

Alan B. Simmons in Chapter V gives an overview of family planning programmes in Colombia and shows the impact of information campaigns on the programme. The author clearly traces the history, background, growth and development of the Colombian programme.

With the help of necessary data, tables and statistics, he shows the patterns of clinic growth in the absence of information campaigns. He concludes rightly, "It would appear that the natural course of growth in the absence of directed informational campaigns is characterised by a gradual levelling off in the number of new patients and eventual steady declines in these new numbers within any given clinic. While diffusion of information may be taking place naturally through word of mouth, it is apparent that either this process reaches only a few people or that it must be supplemented by other forms of education and persuasion". The second part of the chapter deals with "a pilot experiment in family planning communications" to assess the relative importance on clinic attendance of (i) a personal visit by a family planning educator, and (ii) the delivery of written materials on family planning. While analysing the findings of this pilot experiment, the author refers to three studies made in Taichung, Taiwan, Puerto Rico and Bogota. Simmons concludes, "Impersonal methods of communication tend to be similar to one another in their impact on the adoption of family planning because they are equally effective in creating awareness and relating minimal information about clinic services." The third part of the chapter discusses the radio campaign in Colombia and a comparative study of knowledge, attitude and practice before and after the radio campaign was conducted in Cali. As motivation for contraceptive practice is a cumulative result of different communication media, mass media like the radio can mainly disseminate family planning information to a wider audience. It starts a chain reaction among the audience leading to 'increased interpersonal discussion of birth control among close acquaintances'. This study very well shows the strengths and limitations of the radio as a mass medium for family planning communication. The study finds : "The principle impact of the radio campaign on clinic development in Colombia appears to be indirect".

It is the impact on clinic attendance which is vital to family planning programmes. The last chapter, Chapter VI, deals with a study of the impact of a short-term radio campaign in two small cities of the Dominican Republic. A total of 805 eligible women from the two cities were interviewed before and after radio campaigns in August and October 1970. Radio messages were broadcast throughout the month of September 1970. The study shows that "the radio campaign was successful in each of the three cities where it was carried out". This is borne out by "a significant increase in new acceptors immediately after the campaign". The study also brought out the success of the radio campaign in creating awareness about the location of the clinic, in improving the clinic's image of catering to the people, in communicating family planning in a better way and in acting as an "effective communication channel for younger women and for childless women".

The reviewer feels that this book makes useful reading for family planning communicators, researchers and programme administrators. The book, the first volume in the ACC Population and Demography Series, is ably designed and well brought out. Students and those interested in this field will look out eagerly for other books in the series.

J. S. Apte

THE FAMILY PLANNING ASSOCIATION OF INDIA

(Registered Under the Societies' Registration Act. 1860)

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SOUTH-EAST ASIA : METHODS IN POSTPARTUM FAMILY PLANNING

DR. J F. MARTIN*
(Maharani Bagh, New Delhi)

The postpartum approach in family planning

Postpartum family planning is an approach increasingly developed in the past years, and is based on the rationale that women having recently delivered in a health facility are :

— of proven fertility, and at risk to become pregnant again relatively rapidly,
— more motivated to regulate their fertility than women in non-puerperal situations,
— institutionalised, which makes them a "captive audience", and makes it also easier to offer certain methods of family planning (especially tubectomy and IUD insertion).

The introduction of postpartum family planning in a hospital can be a factor in raising health standards. Experience has shown that women come much more often for their postnatal check-up appointment when they know that family planning advice and services will be available at that time (rates of return have been otherwise in the neighbourhood of 10-20 per cent in situations in developing countries). Another advantage of this approach is that, although a postpartum programme cannot be successful if its creation is simply an administrative decision without allocation of additional resources, *significant dividends may be expected from limited additional inputs,* since the programme can share some of the manpower, equipment and facilities it needs with Obstetrics and Gynaecology departments. Also, a postpartum programme is a good way to increase the interest in and commitment to family planning of clinical specialists, and to put them in contact with the social aspects of their field.

In 1966, the Population Council (New York) launched an International Postpartum Family Planning Programme, involving 25 hospitals of 14 countries. By January 1971, it included 112 hospitals, and had served 600,000 acceptors. Along the same pattern, in 1969, the Government of India launched a national postpartum programme. In general, this experience showed that the postpartum approach was a sound one, and that high acceptance rates could be expected from a suitably implemented programme.[1] Two findings of importance are that acceptors in the International Postpartum Programme tend to be younger, and to have less children, than acceptors in national field programmes, and their rate of continuation of family planning practice has been found to be higher than in most national programmes.[2] These features make the overall impact of the programme more significant. A recent study shows that the acceptors in the programme have experienced a sharp decline of their fertility.[3]

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The World Health Organisation, with a recently expanded mandate in the family health field, and financial resources made available notably by the United Nations Fund for Population Activities (UNFPA), is encouraging the development of postpartum family planning programmes, within the broad concept of a maternity-centred approach to family health services. It has issued guidelines in this respect for health personnel involved in such programmes.[4]

If the postpartum approach has proved to be a successful way to offer family planning services, one should however keep in mind that hospital-based postpartum family planning addresses itself above all to the women delivering in these hospitals (although there are indirect acceptors, who come for services without having recently delivered in the institution). This limits seriously its *potential* in certain countries and makes it the more imperative to develop postpartum family planning services outside of hospitals, in the field. As a matter of fact, for the South-East Asia Region, rough estimates indicate that the proportion of recently delivered women which can be reached by a hospital-based postpartum programme is around 1 per cent in Nepal, 2 per cent in Bangladesh, not more than 5 per cent in Indonesia and India, around 15 per cent in Thailand[5] (possibly more because the indirect acceptor component is particularly important in the Thai programme). Sri Lanka, where 75 per cent of the deliveries are institutionalised, is the outstanding exception, and a countrywide postpartum programme in hospitals and maternity centres there should bring very good results.

Postpartum family planning in South-East Asia

This review considers six countries : Bangladesh, India, Indonesia, Nepal, Sri Lanka and Thailand. They happen to be those which, within the South East Asia Region of the World Health Organisation, have policies favourable to family planning at the present time.[6] In most of these countries, family planning activities have first been undertaken by voluntary agencies, in particular, affiliates of the International Planned Parenthood Federation. By now, the main responsibility for family planning programmes is assumed by the government in all six of them.

Postpartum family planning activities began in several countries of the region under the auspices of the Population Council International Programme. Summarised countrywise, the present situation is the following:

India: Two Indian hospitals were among the original participants of the International Programme. The overall success of the project led to the establishment in 1969, by the Government of India, of an All-India Hospital Postpartum Family Planning Programme. It began with 59 hospitals and, in a second phase, has been expanded to an additional 62 hospitals. By now, this programme is making satisfactory progress.[7]

Thailand: Four Bangkok hospitals were included in the initial Population Council Programme, and have achieved very encouraging results. Later on, other hospitals and MCH Centres were included in the scheme, with success.[8, 9] Several new family health projects, prepared by the National Family Planning Programme with, in recent time, the assistance of WHO, are now at an advanced stage of planning. The most important of them aims at the strengthening of maternity-centred family health services in the North Eastern part of the country.

Indonesia: A postpartum programme was initiated in 1969, in five large hospitals of Djakarta and Bandung, with the support of the Population Council, and has been expanded to involve a total of 26 hospitals. Recently, the UNFPA and the IDA (International Development Association, an affiliate of the World Bank) have made available US $26.4 million to the Indonesian Government, for the development and broadening of activities in the family planning field. Several other agencies are cooperating with the Government. Postpartum family planning activities are an important component of the overall project.

Bangladesh: Postpartum activities have been organised to date in five hospitals in Bangladesh, under the National Postpartum Programme, which was formally established in 1971. Family planning is one of the two foremost priorities (with rural health services) of the government in the health field. In the new integrated rural health care scheme which has been adopted, health and family planning activities will be carried out jointly (in contrast with the former "vertical" family planning programme). Maternity-centred family health services will be an important part of this integrated care.

Sri Lanka: Since 1965, the Government has taken over from the Family Planning Association the overall responsibility for the country-wide provision of family planning services. During the past years, there was no particular emphasis on the postpartum approach, but a large project in this sense is now being implemented, with the assistance of WHO and other agencies.

Nepal: There is in Nepal a national Family Planning and MCH Project since 1965. However, as mentioned above, hospital-based postpartum family planning cannot be of great importance in the country at present, because only a few per cent of the deliveries are attended to by trained personnel, and still less occur in institutions (about 1%).

Methods in postpartum family planning

A. Intrauterine contraceptive devices (IUD)

Much emphasis has been put on the use of the IUD since about 1965 in family planning programmes in South-East Asia, with some hope that it would "solve the population problem . . .". In India, initial results were high, with close to one million insertions in 1966, and more than 700,000 in 1967,[c] thanks to intensive action (energetic educational and motivational efforts, setting of targets, IUD camps). But there were a number of side-effects, particularly bleeding and pain, in part due to inadequate screening and preparation of the patients. Further, these side-effects were not adequately taken care of (insufficient follow-up care), and this led to the emergence of rumours, which had an important backlash effect.[10] Although basically a very useful and usable method, the IUD became unpopular among family planning patients and workers alike, and has not yet recovered from that counter-publicity.[11] Understandably, the same reserve prevailed when the All India Postpartum Programme was established, and the IUD is little used within it (Two States are exceptions to the foregoing, Punjab and Haryana). However, family health leaders in the country are conscious of the need to rehabilitate it, and are making efforts in this sense. Experimentation with new devices (Copper-T, Copper-7, silastic progesterone-releasing devices) are actively pursued.[12]

The IUD story in Sri Lanka and Nepal follows roughly on the same lines. In the former East Pakistan, forceful action led to very high acceptance figures in the national field programme. There were approximately 300,000 insertions annually in 1967-69, proportionately about two times more than in India, but there was a marked decline in 1970.[6, 13] By contrast, the experience in Thailand has been a consistently successful one in the postpartum programme of the large Bangkok hospitals and in 11 hospitals outside Bangkok. It is the prevalent method there in the hospital family planning clinics, and the Thai family planning leaders think that it should continue to be so. In Indonesia also, the IUD is the predominant method in the postpartum programme, although its acceptance has been decreasing relatively in recent times, at the expense of the pill and to some extent of the condom.

It has to be noted here that the decrease in the acceptance of the IUD over the past years in several countries is also accounted for by reasons extraneous to its intrinsic qualities, i.e.

— the major emphasis on male and female sterilisation in India, and on vasectomy and the pill in Nepal;

— the availability of the oral pill *at the periphery* in Nepal and Sri Lanka (prescribed by paramedical personnel) while the IUD is available only where a doctor can insert it. In Thailand, where auxiliary midwives also distribute pills,[14, 15] the pill acceptance rate has increased much more than the IUD acceptance rate in the last two years, for the same reason, although the IUD is quite popular in Thailand.

As regards the insertion of IUDs by paramedical personnel, the attitude is rather negative in India presently, because of unsatisfactory former experience. As far as Bangladesh is concerned, paramedicals were used to insert IUDs in the Pakistan National Family Planning Programme, and 75 per cent of the insertions in 1969 were performed by them. In Indonesia, official policy allows the *bidans* (trained midwives) to insert IUDs after special training, but the practice of insertion by them is still limited. In Thailand, the Family Planning Research Unit at the Chulalongkorn Hospital, Bangkok, organised the first IUD insertion course for nurse-midwives in the spring of 1972. The issue is under study in Sri Lanka and in Nepal, although it is of limited relevance in the latter country, where there are two times less nurses than doctors, and one nurse or midwife for about 70,000 people only.

B. *Oral contraceptives (the "pill")*

Oral contraceptives have been used increasingly in the last years in Indonesia, Thailand, Sri Lanka and Nepal. In these four countries, they may be prescribed by paramedical personnel, who are taught about the contra-indications and side-effects of the method, and give the drug only after getting negative answers from the patient to a standard checklist of questions.[14, 15] The continuation rate is high in Thailand (63-93% at 12 months in the postpartum programme)[9], but has been found to be low in Sri Lanka and Nepal. As regards Bangladesh, the national Fourth Five-Year Plan of Pakistan (1970-75) included the introduction of orals in the family planning programme in a big way. The pill is actually the prevailing method in the postpartum efforts initiated in this country, with about 70 per cent of all acceptors choosing it in 1972. In India, there is still a reserved attitude toward orals, although a number of pilot projects have been underway for several years. Overall average continuation rates were low, but exceptions to this among the individual projects suggest that adequate follow-up and sustained motivational efforts by the health workers can make much difference.[16] In August 1972, a special committee appointed by the Ministry of Health and Family Planning reported that the use of steroidal oral contraceptives was "safe, subject to certain conditions and limitations". It recommended an expansion of the on-going trials, and education of both medical and paramedical personnel about orals.

The use of orals in the postpartum period is a problem because the oestrogenic component of the pills tends to inhibit lactation.[17-20] Therefore, the potential consequences for the baby of diminished breast-feeding must be taken into account,[21] and hormonal contraception should normally be instituted only when the infant is taking supplemental solid foods well. Presently, this is a drawback for mass use, since it implies a thorough follow-up of the women, which is difficult to achieve. The situation is different when there is no intention to breast-feed, but the latter should remain exceptional in South-East Asia.

C. *Condoms and other conventional contraceptives*

The condom is widely available in India, where it is presently the most important spacing method. Thanks especially to the Nirodh Marketing Programme, the number of "user-equivalents" in the national programme in 1970-71, more than 2 millions, was four times greater than the figure for 1967-68.[11] It is also widely used in Bangladesh, and is well accepted in Nepal. It is of less importance in Indonesia and Sri Lanka (10-15% of the acceptors in the field programmes), and is conspicuously absent from the Thai programme. The other conventional means are of marginal importance, with the exception of foam tablets in Indonesia, where they are used about as much as condoms, because of the relatively low acceptability of the latter.

D. *Sterilisation*

The in-hospital postpartum approach, dealing with institutionalised women, and in conditions where the operation is an easy procedure, was understandably particularly suited to put female sterilisation into prominence as a family planning method. As a matter of fact, acceptance of tubectomy is increasing in all the countries under consideration. It has to be noted here that postpartum family planning programmes, like any other family planning effort, address themselves to the family as a whole, and the sterilisation of the husband (or the use of condoms) is one of the available alternatives.

In India, major emphasis has been put on sterilisation for a number of years. Vasectomy is encouraged through intensive campaigns. In the All India Hospital Postpartum Programme, tubectomy is a very widely accepted method. The acceptor figures are higher for conventional contraceptives, but the effectiveness and the continuation rate with the latter are obviously not as good as with tubectomy (there is also much interest in vaginal tubectomy, either by culdotomy or culdoscopy, as an interval, non-puerperal, sterilisation—Tubectomy camps are being organised in the field). The situation is analogous in Nepal, although on a different scale, and with few female sterilisations because of the lack of institutional facilities. However, in the few maternity wards which have postpartum activities, emphasis is put on tubectomy. The figures available for Bangladesh indicate that sterilisation accounts for only 3 per cent of the postpartum acceptors in 1972, but nationals working in the postpartum programme say that many more women are willing to accept the method, and ask for it. Scarcity of beds and man-power are the major obstacles to better performance in this respect. One might recall here that, although a Moslem country, Bangladesh has experienced a large acceptance of male sterilisation in the past years.

In Indonesia, Sri Lanka and Thailand, sterilisation is less popular, because of socio-culturo-religious obstacles. In particular, there are almost no male sterilisations in these countries. The number of tubectomies is increasing however, especially within the postpartum programmes. In fact, from the available data and from discussions in the field, it appears that, whatever the country, the dedication and the drive of the family planning workers, and the administration of the programmes, are very significant factors which may outweigh socio-cultural resistances. Special care, interest in the patient, and motivational efforts, have produced relatively high levels of tubectomy acceptance postpartum (20% or more of the acceptors) in selected institutions, in both Buddhist and Moslem countries. As regards Sri Lanka, recent information (gathered at a National Seminar on Family Health, held in January 1973) indicates that many women delivering in hospitals would like to be sterilised. The factors accounting for the small number of tubectomies performed in the past seem to have been above all shortage of bed space and operating facilities, and sometimes also the reluctance of the doctor to offer the procedure.

E. Other methods

The one we want to mention is long-term hormonal contraception by injection, with medroxy-progesterone acetate (Depo-Provera[R]). The drug has been under question, especially in Western countries, because beagles which received it developed breast nodules, and also because of the side-effects of amenorrhoea and irregular bleeding. An important point, however, is that trials in the field have shown that, in spite of its side effects, the method has been quite popular among the patients.[22, 23] It is probable that the development of nodules in beagles has no relationship to the human, as this drug has been used in much higher dosage in series of patients with endometriosis and endometrial carcinoma. The McCormick Hospital in Chiangmai, Thailand, has accumulated a large experience with Depo-Provera From 1965 to 1972, they had more than 19,000 new acceptors of the method, who received about 120,000 injections, representing 30,000 women-years of use. Some of their patients used the method for as much as eight years. To control the problems of amenorrhoea and intermenstrual staining, they use cyclic oral oestrogen, with success. A recent survey showed that there were less breast nodules among Depo-Provera patients than among a control group.[24]

This method appears particularly suitable for postpartum use. The fact that it may cause amenorrhoea (ill-accepted by non-pregnant non-lactating women) is of no consequence in the postpartum period. Also, there is evidence that progestagens tend to enhance milk production (in any case, do not decrease it).[25] The ease of use of a method necessitating only a three-monthly (or even six-monthly) injection does not need to be stressed. It therefore deserves continued attention, and its potential for widespread application should be further tested. As a matter of fact, in addition to the cited Thai study, trials with medroxy-progesterone acetate are going on in several countries of the region.

Table 1 summarizes the differential use of the various methods in postpartum family planning in the six countries under consideration, in 1971 (1972 for Bangladesh).

TABLE 1

Postpartum family planning in six countries of South East Asia, 1971 (Bangladesh : 1972)

Acceptance by method (all acceptors)

	IUD	Orals	Tubectomy	Others
Bangladesh[1]	+	+++	+	++
India[2]	10%	5%	30%	55%[4]
Indonesia[2]	65%	20%	5%	10%[5]
Nepal[1]	+	++	++	++[6]
Sri Lanka (Ceylon)[1]	++	++	+	+[6]
Thailand[3]	57%	24%	18%	1%[7]

1 Countries with postpartum activities on a limited scale for the time being. The "popularity" of the different methods is estimated according to available acceptor figures and discussions with family planning workers It has therefore only indicative value.

2. Figures drawn out of service statistics, rounded to the next multiple of five.

3. From : Rosenfield, A G, and S Varakamin, *op cit* 9

4. Roughly 5 per cent vasectomies, and 50 per cent conventional contraceptives (98% of which are condoms).

5. Of which 0.5 per cent is hormonal contraception by injection

6. Mostly condoms.

7 Hormonal contraception by injection

It is interesting to note here that, according to the findings of the International Postpartum Programme, the contraceptive mix of acceptors which would be expected in general where all the usual methods are routinely offered is the following:[4] IUDs 45 per cent; Oral contraceptives 30 per cent; Sterilisations 10 per cent and Conventional contraceptives 15 per cent.

In order to allow a comparison, Table 2 shows the approximative contraceptive methods mix which was prevailing in the national *field* programmes of these countries in 1970.

TABLE 2

Contraceptive mix of acceptors (%) in the national field family planning programme of six countries of South-East Asia, 1970[1] (figures rounded to the next multiple of five)

	IUD	Orals	Sterilisation	Others2	Current users3
Bangladesh (East Pakistan at the time)	25	0[4]	30[5]	45	5[8]
India	10	0	35[6]	55	10
Indonesia	50	40	0	10	0.5
Nepal	5	40	15[5]	40	2.5
Sri Lanka (Ceylon)	30	50	10[7]	10	6.9
Thailand	30	60	10[7]	0	6.5

1 Based on · Dorothy Nortman, "Population and family planning programmes · A Factbook, "*Reports on Population/Family Planning*, No 2 (Fourth Edition), September 1972, and on service statistics available to the author

2 Estimates of "user-equivalents"—Mostly condoms (Indonesia Condoms and foam tablets).

3 Estimated current users (through the *national* programmes) as a per cent of the married women 15-44 years old.

4 Orals introduced in the programme in the Fourth National Five-Year Plan (of Pakistan), 1970-75.

5 Mostly male sterilisation

6 25-30 per cent of the sterilisations in India during this period are female sterilisations.

7 Mostly female sterilisation

8 Estimate by national family planning officials.

One can see that, countrywise, both these tables show roughly the same trends. A few remarks are warranted :

— The great share of "Others" (mostly condoms) is subject to question. The Population Council refrains from giving to estimated figures of "user-equivalents" the same weight as to figures for other methods.[6] It is improbable that all of them did actually have the contraceptive effectiveness assumed in the calculations, i.e., 130 units of conventional contraceptives equal one acceptor of another method (this is one reason why figures in both tables have been rounded as they are).

— Figures for IUD and especially tubectomy acceptance are in general higher in postpartum programmes. This confirms that the postpartum approach is particularly suited to foster the adoption of one of these methods.

— Orals appear somewhat less important in postpartum programmes, which is consistent with the reserve enounced above. The exception is Bangladesh, where the pill has been introduced recently, and where family planning services have been seriously disturbed by the recent emergency situation also. The prevailing contraceptive methods mix may therefore be influenced by factors other than the actual preferences of the patients.

Postabortum family planning

It is necessary here to underline the relevance of what has been said, not only as regards delivery and the postpartum period, but also abortion and the postabortum period. Numerous countries have liberalised their abortion laws in recent times. In India, the new "Medical Termination of Pregnancy Act" came into effect on April 1, 1972. It is clear that there are important *postabortum family planning needs*. In fact, those are more compelling even than postpartum, since aborted women have demonstrated spontaneously a definite and strong motivation to birth planning.

For purposes of spacing, preference should be given to the IUD (insertion at the time of the curettage procedure) and to orals, with the potential inhibition of lactation being no problem. In India, however, the tendency is presently to propose a permanent method, i.e., sterilisation, since most of these women have already achieved their desired family size. Moreover, developing countries with liberal abortion laws cannot afford the burden of recurrent terminations of pregnancy in the same women as a birth control device. Their limited obstetrical and gynaecological services would not stand such a strain In the Indian maternity services where abortions are now carried out, the majority of the women—60 to 70 per cent in general—are sterilised after the termination, during the same surgical session (vaginal sterilisation).

Conclusion

All six South-East Asian countries under consideration have governmental family planning programmes at the present time, although they are at markedly different stages in the implementation of these programmes. All these countries deem the integration of family planning services into health services desirable, but there is a variation in their approaches to implementing the concept. The health services infrastructure is to be the base for the health/family planning activities, but this infrastructure varies widely, in coverage and sophistication, from one country to the other, and even within one given country. These countries have different cultures, different religions, and different administrative patterns.

All these elements influence the way family planning programmes have been implemented, and the methods which have been used, administrative operational as well as clinical, in field programmes as well as in postpartum programmes. For example, male and female sterilisations have proved to be very acceptable in India, in Bangladesh (in spite of being a Moslem country), and acceptable in Nepal, but were till recently.considered impracticable in Indonesia. In Sri Lanka and Thailand, tubal ligation has some popularity, but not vasectomy. The trend however is clearly for an increasing acceptability of sterilisation procedures. In the latter three countries, although there are still very few vasectomies at the present time, increasing numbers of tubectomies are performed, especially within postpartum programmes.

If cultural and religious factors have hindered the adoption of sterilisation as a family planning method in some countries, contemporary historical factors seem to be mainly responsible for the disrepute of the IUD in others. This unsatisfactory experience in India is due in large part to the too enthusiastic "crash programme" undertaken in 1965 and the following years, and the damaging rumours which followed the emergence of side-effects, to take care of which, no adequate follow-up services were available. By contrast, the Thai IUD record has been a very successful one.

Historical reasons account also in part for differentials as regards oral contraceptives. In recent years, they have proved to be very popular in countries where they have been introduced on a large scale, especially in Thailand, Sri Lanka, also Nepal and Indonesia (and on small scale in Bangladesh). The most important factor in this often dramatic increase of pill use appears to be the decision to make it widely available at the periphery, through paramedical personnel. Yet, up to date, the Indian medical profession has shown a marked reserve toward orals, and as of now the pill has not had an opportunity to show what it could do on a national scale in India.

The acceptance of the condom, the most widely used "conventional contraceptive", shows a rather close parallelism with that of vasectomy. In Indonesia, spermicides are used as much as condoms, which have been of low acceptability. Condoms are practically absent in the Thai programme.

This review makes it clear that no one method is ideal. All those which are usually offered have advantages as well as drawbacks, dependent on their intrinsic characteristics, and on the situation (sociocultural and administrative) one is considering. For postpartum family planning, however, a few generalisations are possible :

- The intra-uterine contraceptive device is still the *spacing* method of choice if sufficient follow-up can be provided. Efforts should be made to rehabilitate it in the countries where it has become unpopular. One may add that the very *concept of spacing*, which seems often extraneous to common people as well as to the elite, has to be stressed in educational and motivational efforts. Technically, when the Lippes loop is used, Size D should be adopted for immediate insertion (2-5 days postpartum), and should be introduced with the special, long, postpartum inserter developed by the Population Council.[1]
- Hormonal contraception is increasingly gaining momentum throughout the region, and also in the postpartum programme. Its high acceptability demands that the best be made out of it, inspite of side-effects (notably the undesirable inhibition of lactation by oestrogen containing compounds). The potential widespread use of contraception by injection with long acting progesterone should be further studied, in order to take advantage of the popularity among women this method has shown in past trials.
- Postpartum tubectomy, through a small sub-umbilical incision, is the *permanent* method of choice, and its acceptance rates are also increasing. It is unfortunate that the scarcity of hospital beds and operating facilities, and occasionally the low motivation of the doctors, do not always permit the method to be offered to all women who want to be sterilised. To tackle this problem should be a major concern in the organisation of postpartum programmes in several countries.
- Other means, conventional as well as vasectomy of the husband, have their place in postpartum family planning. They offer useful back up opportunities.

Finally, it needs to be underlined that, where abortion is acceptable, postabortum family planning care should be an integral part of maternity-centred family health services.

Summary

This paper deals with six countries of South-East Asia where postpartum activities are presently going on, either in large programmes (India, Indonesia, Thailand) or on a limited scale (Bangladesh, Nepal, Sri Lanka). The methods in use are presented, and their acceptance in the various countries is discussed, along with the reasons which account for differentials. Socio-cultural factors and recent historical

reasons (implementation of the programmes) have a definite bearing on the "popularity" of these methods, although the quality of the service is probably the single most important factor.

The postpartum (and when relevant, postabortum) approach is an efficient and fruitful way of delivering family planning and is given increasing emphasis in national family planning programmes in South-East Asia.

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THE ROLE OF PRACTITIONERS OF INDIGENOUS MEDICINES IN THE FAMILY PLANNING PROGRAMME—A STUDY IN THREE STATES

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The widening gap between the lowering death rate and the high birth rate has created population problems which need immediate attention and check. It is imperative that India controls her unwarranted rise in numbers if the people have to attain a standard of living even remotely comparable to that of the developed countries. It is because of this realisation to provide the people with the essential basic comforts and to improve the quality of life that gigantic efforts are being made to reduce this gap between increasing birth and lowering death rates through the advocacy of certain family limitation practices. Such a huge nationwide programme, however, requires the active cooperation of all sections of the community. The participation of practitioners of the indigenous system of medicine is, therefore, very essential as they constitute the major source of medical care for the rural people and as such, wield a great deal of influence among them.

The WHO Workshop on Operational Studies related to the integration of maternal and child health and family planning in the overall context of general health services held at New Delhi in July 1971 recommended that the role of Indigenous Medicine Practitioners (IMPs) with respect to maternal and child health and family planning and the possibility of the utilisation of their services to enhance the integrated MCH and family planning programme be studied, so as to identify the characteristics which may predict their receptivity or otherwise to the programme.

Materials and methods

The present study was carried out in three States of India, viz, Haryana, Madhya Pradesh and Uttar Pradesh. In the States of Haryana and Madhya Pradesh, three Community Development Blocks in three different districts were surveyed while in Uttar Pradesh a stratified random sample comprising of ten per cent of the villages in five Community Development Blocks was selected. The villages so selected were visited by a study team and an attempt was made to identify all the indigenous medicine practitioners* practising in a particular village with the help of villagers, panchayat members, fellow practitioners and the staff of the Primary Health Centre Ninety-three practitioners thus identified were contacted individually and every endeavour was made to establish excellent rapport with them. They were then interviewed at length with the help of a semi-structured interview guideline, which was preferred to a completely structured schedule, for its flexibility. The information collected concerned their age, general and professional qualifications, experience, registration status, patient load, income, etc., and their attitudes to and willingness to participate actively in the family planning programme. Their knowledge about the various existing methods of family planning and their reactions to these methods were also ascertained.

Results and discussion

Of the 93 full-time Indigenous Medicine Practitioners interviewed, an overwhelming majority (93.5%) approved of the concept of a small family. The remaining six were against the use of artificial methods of birth control, the reasons given by five of them being that it is against the 'law of nature' to prevent births by artificial means, and by the sixth that it was against his religion to practise family planning. On being further questioned about their reactions to the present family planning programme, 63 IMPs (67.7%) expressed their approval of the programme while the remaining 30 (32.2%) disapproved of the way in which it is being implemented. This means that 24 IMPs who approved of the concept of family planning did not approve of the way in which the programme is being run. The reasons for their disapproval were that under the present family planning programme "only a few communities are motivated to accept family planning while others are being spared" (by 33.3%), huge amounts of money earmarked for incentives are being used to corral acceptors for family planning (by 12.3%), uneligible people (either too old or too young or even unmarried) are being vasectomised (by 20.8%) and that the Government does not, as yet, have any good and effective method of birth control (by the remaining 20.8% IMPs).

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* Persons practising full-time, any type of curative medicine without having recognised qualifications, have been defined as Indigenous Medicine Practitioners for the purpose of this study.

In response to the question as to whether they were rendering any family planning services to their clients, 79 (84.9%) stated that they were engaged in motivational and referral activities with regard to family planning and 26 (27.9%) replied that they kept a stock of contraceptives for distribution among their clients.

In reply to the question whether they were willing to actively participate in the present family planning programme, 75 (80.6%) of the IMPs interviewed expressed their willingness for the same. It may be interesting to note here that their willingness to participate in the national programme was slightly greater than their approval of the present family planning programme. Some (14 or 18.7%) IMPs agreed to participate on the condition that they receive payment for their services while sixty-one (81.3%) were prepared to render unconditional help to the Government. Also, while as many as 53.3 per cent of the IMPs volunteered to offer any help which the Government may ask for (85.0% with and 15.0% without remuneration), about one-third (36.0% were willing to serve only as 'Depot Holders' for the distribution of contraceptives (89.0% with, 11.0% without remuneration). It was encouraging to note that seven (9.3%) of these IMPs were willing to perform vasectomies (if training was given to them) along with the distribution of contraceptives (43 with, 57 without remuneration). Surprisingly enough, there was only one IMP among those willing to help, who stated that he could manufacture and distribute indigenous drugs for birth control.

Of the 18 (19.4%) IMPs who expressed their unwillingness to help in the work of the national programme, six disapproved of family planning and, as such, were unwilling to participate in the programme, five expressed their inability to participate because of old age, three were too busy with their private practice to spare time for these activities, two were afraid of participating openly on religious grounds, and the remaining two could not specify any particular reason apart from the fact that they were not interested.

In the following paragraphs an attempt has been made to determine if the socio-economic characteristics of the IMPs such as age, general and professional educational levels, experience, registration status, system of medicine practised and daily patient load, were significant factors in predicting their willingness to participate or otherwise in the present family planning programme.

Age: A little more than one-third (37.6%) of the IMPs included in this survey were in the younger age group of under 34 years, two-fifths (43.07%) were middle aged (35-54 years) and the remaining one-fifth (19.4%) were 55 years or older (Table 1).

A linear trend was noticeable when the age of the IMPs was correlated with their willingness to participate in family planning activities: their willingness decreased significantly with increasing age.

TABLE 1

Age and willingness to participate in the family planning programme

Age (in completed years)	Total number of respondents	Willing	Unwilling
> 25	7	7 (100.0)*	0 (0.0)
25 - 34	28	27 (96.4)	1 (3.6)
35 - 44	18	15 (83.3)	3 (16.7)
45 - 54	22	18 (81.8)	4 (18.2)
< 54	18	8 (44.4)	10 (55.8)
Total	93	75 (80.6)	18 (19.4)

$P = 0.452$ for < 35, 35-54 years and $P < 0.01$ for 35-54, > 54 years

* Figures in parentheses represent percentages

Educational status and professional qualifications: The distribution of the IMPs according to their educational level revealed that 18.2 per cent were literate (could read and write one or more Indian languages); 22.6 per cent had studied up to the middle school level; 53.8 per cent had passed High School; while the remaining 5.4 per cent were graduates (Table 2).

About 11.8 per cent of the IMPs had obtained a degree/diploma in one of Indigenous/integrated systems of medicine after having undergone training in institutions of indigenous systems of medicine recognised by Universities and/or State Boards of Indigenous, Homeopathic or Biochemic systems of medicine (Table 2). Another 54.0 per cent of the IMPs had obtained various diplomas in Indigenous or Homeopathic systems of medicine from institutions not generally recognised by the State Registration Boards, after undergoing training through the so-called correspondence courses or appearing for examinations through private study, and the rest (33.3%) did not possess any professional qualifications, whatsoever.

No significant differences in the degree of willingness to parti-

TABLE 2

Educational level and professional qualifications and willingness to participate in the family planning programme

	Total number of respondents	Willing	Unwilling
General educational level†			
Merely literate	17	12 (70.6)*	5 (29.4)
Middle School	21	16 (76.2)	5 (23.8)
High School	50	42 (84.0)	8 (16.0)
Graduate or above	5	5 (100.0)	0 (0.0)
Professional qualifications‡			
BIMS recognised GAMS qualifications etc.	11	10 (90.9)	1 (9.1)
Generally unrecognised diploma etc	51	39 (76.5)	12 (23.5)
Nil	31	26 (83.9)	5 (6.1)
Total (for both parameters)	93	75 (80.6)	18 (19.4)

† $P > 0.2$ for Upto Middle School, High School and $P = 0.44$ for High School and Graduate levels

‡ $P = 0.32514$; Fisher's Exact Test

* Figures in parentheses represent percentages

cipate in the programme were found with an increase in their educational status or recognised professional qualifications.

System of medicine practised and duration of practice: There were very few IMPs who were practising purely allopathic (8.6%) or ayurvedic (10.8%) systems of medicine respectively However, an overwhelming majority practised a combination of different systems of medicine. A little more than half (54.8%) mainly used modern/allopathic medicines, sometimes in combination with indigenous drugs; about 20.4 per cent resorted to indigenous modes of treatment, but many a times, in combination with allopathic medicines, while 5.4 per cent were Homoeopaths but also used allopathic drugs, though to a lesser degree (Table 3).

The differences in response rates between IMPs who mainly used the modern system of medicine and others who mainly prescribed indigenous medicines were found to be statistically significant ($\lambda^2 = 5.80$ and $P \angle 0.02$) indicating thereby that more of the IMPs

TABLE 3

Medicine system practised, registration status, and duration of practice with willingness to participate in the family planning programme

	Total number of respondents	Willing	Unwilling
System :			
Only/mainly modern	59	52 (88.1) *	7 (11.9)
Only/mainly indigenous	34	23 (67.6)	14 (32.4)
Registration status : †			
Registered	67	49 (73 1)	18 (26 9)
Not registered	26	26 (100 0)	0 (0)
Experience in completed years : ‡			
Less than 2	19	18 (94.7)	1 (5.3)
2 - 5	6	6 (100.0)	0 (0)
6 - 10	16	16 (100.0)	0 (0)
Over 10	52	35 (67.3)	17 (32.7)
Total (for all three parameters)	93	75 (80.6)	18 (19.4)

† P = 0 001286 Fisher's Exact Test
‡ P = 0 00016 for < 10 years , > 10 years
* Figures in parentheses represent percentages

who increasingly used allopathic drugs, were willing to participate in the family planning programme as compared to those who resorted mainly to indigenous modes of treatment. More than half of the IMPs (55.9%) interviewed had over ten years' experience, and about 20 4 per cent had practised for less than two years and 23.6 per cent had between two and ten years' experience. As expected, there was an inverse correlation between their willingness to participate in the programme and duration of practice.

Registration status : Each State has a Board of Registration for the IMPs. The registration of the IMPs is done either on the basis of recognised professional educational qualifications or specified number of years of experience.

About three-fourths (73.1%) of the IMPs interviewed were reported to be registered with the State Boards (Table 4).

Their registration status was significantly related to their willingness/unwillingness to participate in family planning work (P = 0.001286 Fisher's Exact Test), indicating thereby that unregistered

TABLE 4

Patient load, monthly income and willingness to participate in the family planning programme

	Total number of respondents	Willing	Unwilling
Patient load (weekly average):†			
1 - 50	51	41 (80.4)*	10 (19.6)
51 - 100	15	12 (80.0)	3 (20.0)
101 - 150	15	14 (93.3)	1 (6.7)
151 - 200	3	2 (66.7)	1 (33.3)
201 - 250	4	2 (50.0)	2 (50.0)
251 - 300	4	3 (75.0)	1 (25.0)
> - 300	1	1 (100.0)	0 (0)
Net monthly income in Rupees (average):‡			
Upto 100	21	13 (61.9)	8 (38.1)
101 - 200	22	18 (81.8)	4 (18.2)
201 - 300	17	14 (72.9)	3 (17.1)
301 - 400	6	6 (100.0)	0 (0)
401 - 600	12	11 (81.7)	1 (8.3)
601 - 1000	12	11 (81.7)	1 (8.3)
Over 1000	3	2 (66.7)	1 (33.3)
Total (for both parameters)	93	75 (80.4)	18 (19.4)

† $P > 0.5$ for < Rs. 100, Rs 101-200, and $P > 0.10$ for < Rs 200, > Rs 200

‡ $P > 0.05$ for < Rs 100; Rs 101-300 and $P = 0.0643$ for < Rs 300, Rs. 301-600, and $P = 0.4$ for < Rs. 600, > Rs 600

* Figures in parentheses represent percentages

IMPs showed a greater desire to participate as compared to those who had registered themselves.

Patient load and monthly income: The median value or the number of patients served by the IMPs per week worked out to 46.6, the maximum and minimum figures being less than 50 patients per week for 54.8 per cent and over 150 for 12.9 per cent of the IMPs.

The median income of an IMP was around Rs. 227 per month; while 22.7 per cent had monthly incomes of less than Rs. 100 and three IMPs earned over Rs. 1,000 per month (Table 5).

TABLE 5

Opinions about common family planning methods and reasons for disapproval.

	Vasectomy	Tubectomy	IUD	Condom
Approval	59 (63.4)	47 (50.5)	11 (11.8)	46 (49.5)
Disapproval	19 (20.4)	17 (18.3)	59 (63.4)	22 (23.6)
No opinion	15 (16 2)	29 (31.2)	23 (24.8)	25 (26.9)
Reasons for disapproval :				
Side effects	12 (63.2)	13 (76.5)	54 (91.5)	6 (27.3)
Unreliability	2 (10.5)	1 (5.9)	2 (3.4)	13 (59 1)
Social repercussions	5 (29 3)	3 (17.6)	3 (5.1)	3 (13 1)
Total number of respondents	19	17	59	6

* Figures in parentheses represent percentages.

Differences in patient load or monthly income did not seem to affect their willingness to participate in the programme

Knowledge and opinions about family planning methods : Each of the IMPs interviewed was also questioned with a view to determine his awareness of the various methods of family planning and his reactions to each of these methods. As might be expected, vasectomy, tubectomy, the IUD and the condom were observed to be the contraceptive methods which were invariably mentioned by all the IMPs included in this study. The other methods reported by some of them were oral contraceptives (15.1%), diaphragm and jelly (14.0%) and foam tablets (9.7%). Further, it may be of interest to note that out of 93 IMPs only one mentioned that he was aware of some indigenous remedies for birth control.

Approval or disapproval of the various family planning methods and the side effects associated with them was restricted to only four methods, viz. : vasectomy, tubectomy, the IUD and the condom, which were universally mentioned by all of them (Table 5). Their answers showed that vasectomy was approved by most (63.4%) and tubectomy and condoms were accepted by about half of the IMPs interviewed. However, the IUD as a method of birth control, was approved by the least number (11.8%) of respondents. Among the reasons for disapproval were the occurrence of side effects, unreliability of the method and social repercussions. Table 5 clearly brings out that the occurrence of side effects was the main reason for the disapproval of vasectomy, tubectomy and the IUD. Although in the case of the first two, social repercussions outweighed reliability of the method, this was reversed in the case of the IUD. However, unreliability was the main reason for disapproval of the condom, and was mentioned by more than half (59.1%) of the IMPs who disapproved of it, the other reasons being side effects and social repercussions.

Conclusions

A huge national programme such as that of family planning cannot exclusively depend upon its own workers. The quantum of work involved both in the fields of communication and service is such that it makes it imperative to enlist the cooperation of all sections of the community. The participation of private medical practitioners is all the more essential to the success of the national programmes as they not only serve as agents for the diffusion of knowledge but also provide service components in the programme. In the rural areas where the traditional channels of communication such as the radio, T.V. or press are difficult to reach and other personal channels of communication are likely to be distorted, these indigenous medicine practitioners can play an important role in motivating the people by disseminating knowledge regarding family planning. They not only have a captive audience in their patients but also because of their social status—many hold positions of formal and informal leadership[1], wield considerable influence in and around the communities they live in. Some of them can also serve as 'Depot Holders' and function as strong distribution points for contraceptives as the village people feel less hesitant about going to them.

The above studies and some of the studies conducted earlier[1, 2, 3.] have explicitly shown that the majority of these practitioners have favourable attitudes towards family planning and many of them are already engaged in family planning communication and service activities. Those who express unfavourable attitudes are not against the concept of the small family as such but are against some of the ways in which the present family planning programme is being implemented. It is essential that their fears, apprehensions and misconceptions regarding the programme are removed through educational activities so that these do not cause any damage to the programme.

Further action research is needed to find out the ways and means of utilising the services of these practitioners of the indigenous systems of medicine, and more especially for their participation in motivation and distribution of contraceptives and advising people to accept family planning for the promotion of the programme.

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THE INFLUENCE OF EDUCATION ON FERTILITY

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A major question which countries engaged in modernisation face is the relation between education and fertility behaviour. In many of the developing countries, this has assumed great significance partly because most of them are faced with the problem of rapidly increasing population which retards developmental effort, and partly, also because these countries are investing sizeable proportions of their resources for raising the level of education which is considered to be a lever in accelerating the modernizing process. In some countries, especially in Latin America, there is a widespread belief that direct programmes to induce fertility control are unnecessary because expansion of education would automatically bring about a reduction in birth rate.[1] Even when this claim is not directly advanced, it is argued that the spread of literacy and education is necessary for the effective implementation of family planning programmes, and illiterate people will find it difficult to comprehend new ideas such as birth control, contraceptives, and family planning, and literacy would go a long way in making new ideas acceptable to people.[2]

Studies on fertility behaviour abound in findings which show a negative correlation between education and fertility. Two such studies may be cited as illustrations because of their cross-cultural nature.

In an analysis of the impact of education on fertility, Liu[3] found that countries which are most advanced educationally tend to have low rates of population growth and may expect to have relatively low or moderate birth rates as compared with countries which are educationally less advanced or least advanced. He further found that countries which are educationally least advanced are the ones with the highest birth rates and they may be expected to have the highest birth rates when compared with countries which are educationally more advanced. Table 1 illustrates this point.

Similarly, Dandekar[4], analysing the data concerning the educational level and fertility of 49 countries, found a strong correlation between education and birth rate. The multiple correlation between indices of education (enrolment at primary and secondary levels) and index of fertility (crude live birth rates) showed a cor-

TABLE 1

Some educational and demographic indices
(Group Median)

	Adult literacy rate	School enrolment rate	Annual rate of population increase	Expenditure on education as percentage of national income
17 educationally most advanced countries	98	83	1.3	5.8
27 educationally less advanced countries	68	64	2.3	3.5
24 educationally least advanced countries	14.5	30	2.4	4.0

Note Data abridged from Tables 1, 2 and 3 See Liu, A., ibid

relation co-efficient of –0.79. The inverse correlation between education and fertility, noted in the two studies, has been endorsed in time series analysis of several individual countries as well. Attitude studies have added additional support to this trend.

However this inverse correlation between education and fertility cannot be considered as a universal phenomenon. There is some evidence to the contrary as well. Thus married women in Great Britain (1951-52) who had completed college had higher fertility than the average married woman in the country. Similarly, the average family size of Swedish men varied in relation to their educational status. This pattern of high fertility among the more educated was also reflected in the Netherlands census data of 1947.[5]

While these cases may be treated rather as exceptions from the general pattern and could be explained away as aberrations or as due to the play of *ad hoc* factors, the more general phenomenon cited above does not warrant the conclusion that education *per se* is the cause of fertility reduction. As a matter of fact, many of the studies which bring out the negative relationship between education and fertility on the one hand and urbanism, economic development, and many other variables. Indeed, fertility has a stronger inverse correlation with urbanisation than with education. Urban women have shown not only lower fertility than rural women but their fertility rate itself varies inversely with the size of the community as Table 2 shows.[6]

Therefore it will be more correct to say that the presumed causes of fertility reduction go beyond education and into the area of general

TABLE 2

Community size and fertility

Size of community	Mean number of children per women, 45 years and above
(A) West Germany (1958)	
5,00,000 and over	2.0
1,00,000-4,99,999	2.1
20,000-99,999	2.4
5,000-19,999	2.5
2,000-4,999	2 6
under 2,000	2.7
(B) U.S.A. (1950)	
5,00,000 and over	1.99
2,50,000-4,99,999	2.07
1,00,000-2,49,999	2.07
25,000-99,999	2.36
10,000-24,999	2.50
5,000-9,999	2.64
2,500-4,999	2.88

economic development. Within the well established general link between economic development and limitation of family size, it is too difficult to determine the predominant factor because they are all too closely connected. Du Bois[7] calls these factors the "modernization complex", which includes the revolution of rising expectations, economic development, and a political system that permits a more equitable distribution of goods, all of which are intricately meshed.

Jaffe[8], in his study of Puerto Rico, found that formal education, urban life, and other factors combine with expanding economic opportunities to produce heightened aspirations, thus motivating people to limit the size of their families. Carleton[9] has distinguished three types of relations that exist between fertility and other factors :

Type A : Factors acting together to produce an interdependent, joint effect (e.g., expanding economic opportunities).

Type B : Independent, but simultaneously acting, factors functionally inter-related either with each other or with a third factor in such a manner that the full presence of one of these factors is conditioned upon the presence of the other (e.g., urban life).

Type C : Functionally unrelated factors acting to produce an independent, although simultaneous, effect.

If education *per se* is responsible for effecting fertility reduction, something approaching the Type C situation must prevail. There is no support historical or other, to this. Carleton identified ten ways in which education influences fertility by influencing the ends, norms, and conditions of social action. These are :

(1) Education as stimulant of social mobility aspiration,
(2) Education as social mobility channel,
(3) Education as stimulant of consumer aspirations,
(4) Education as stimulant of puericulture (emphasis on quality over quantity),
(5) Differential class values in education,
(6) Cost of education to parents as discourager of large family practices,
(7) Religious education with high values on large family goal,
(8) Religious education instilling norms against the use of contraceptives,
(9) Education converting condition of ignorant minds into means capable of using contraceptives effectively, and
(10) Education, by making husband and wife articulate, converting conditions of pluralistic ignorance into means of sharing ends.

Carleton concludes that none of the ways in which education can affect fertility is completely independent of progress in economic development (Type C). Some of the effects are Type A (act jointly with economic development) and others are Type B (economic development required for financing of any sizeable programme of educational development).

It is sometimes argued that education directly contributes to fertility reduction by raising the age at marriage of women. This argument involves two assumptions : (1) education causes postponement of the age at marriage of women, and (2) postponement of marriage reduces fertility by avoiding pregnancy in the first few years of the reproductive period when women will be at school. These arguments need closer examination.

The assumption that education results in the postponement of the age at marriage of women holds good only for countries where age at marriage is very low (as in India). In the advanced countries, all of which have very high literacy levels, the trend has been for the age at marriage of women to come down.[10] This is revealed from Table 3.

TABLE 3

Female mean age at marriage

Country	1930's	1940's	1950's
U.S.A.	22.6	21.6	21.1
New Zealand	24.9	22 4	22.3
Canada	24.2	23.3	22 4
Denmark	24 4	23.5	22.7
Sweden	25.9	24.3	23.8
Finland	26.4	24.7	23.6
West Germany	—	24.9	23.7
Portugal	26.0	25.1	24.5

It is true that these countries have experienced a reduction in fertility over time but this was achieved by avoiding pregnancies not in the beginning but towards the later part of the reproductive period.

The other assumption that education by postponing the age at marriage also postpones the effective exposure per woman to the risk of pregnancy during the early reproductive period is valid only if age at marriage has any influence on the number of births per woman. The findings of research on the subject are not unanimous. In the Mysore Population Study,[11] the higher age at marriage was found to be associated with lower fertility. For instance, the number of children born to women aged 45-54 years of unbroken marriage in Bangalore City was estimated as 6.7, 6.0, 5.7 and 4 6 for those married at ages below 14, 14-17, 18-21, and 22 and over, respectively. In a study of some rural areas near Benares,[12] it was found that the total number of children born to women who consummated the marriage at 14 or less, 15-16, and 17-19 years, were 7 3, 7.05 and 6.8 respectively. However, the result of another study[13] supports the view that increasing the minimum age at marriage from 15 to 16, 18, or 19 would lead to higher, rather than lower, fertility on account of the expected improvement in health. This is generally endorsed by other writers also.[14]

A comparison of the general fertility rate and the proportion of unmarried women in Kerala in the different age groups shows that though more women marry late, the marital fertility rate is quite high, much higher than in the neighbouring states.[15]

Table 4 shows that a larger number of women in Kerala remain unmarried at age 24 (42.83%) than in Madras (26.37%), or Mysore (7.52%). But the average marital fertility rate is higher in Kerala (242) than Madras (194) or Mysore (233). Tables 4 and 5 together show that the postponement of marriage among women in Kerala does not have any appreciable effect on fertility reduction. The age-span of

TABLE 4

Proportion of never married females by age-group 1958-1959

State	Age group (years) 0-14	15-24	25-44	Above 45
Madras	98.84	26.37	0.88	0.21
Kerala	99.41	42.83	4.22	1.06
Mysore	94.03	7 52	1.45	1.03

TABLE 5

Annual age-specific fertility rate and annual marital fertility rate per 1000 *women* (1958-1959)

State	General fertility rate Age group (years) 15-19	20-24	25-29	30-34	35-39	40-44	Marital fertility rate
Madras	144	246	208	128	80	21	194
Kerala	83	227	278	195	154	45	242
Mysore	205	274	257	160	109	32	233

Source N C Das, *op cit.*, Tables 5 and 6

reproduction has merely shifted to the higher age groups. The fertility rate in Kerala is highest in age group 25-29 and remains so for each subsequent age group.

While the postponement of age at marriage in Kerala has no effect on fertility reduction as compared to other states, it does show some significant effect when groups *within* the state are examined. Based on an elaborate analysis of the data collected from a fertility survey carried out in Kerala in 1961, Mehrotra[16] concluded that there do exist differentials in fertility with respect to education, and that this fertility differential between the more educated and the less or uneducated groups can be ascribed to the postponement of the age at marriage of women. Table 6 gives the mean age at marriage of women in Kerala:

TABLE 6

Mean age at effective marriage of women in Kerala

Duration of marriage		Educational standard Illiterate	Elementary	High school	Graduates and above
1- 4 years	Rural	18.1	18.8	21.2	24.5
	Urban	18.3	19.0	21.3	25.0
10-14 years	Rural	17.1	17.6	20.4	
	Urban	16.8	17.7	20.2	25.1

Mehrotra found that up to the elementary level, education does not seem to have any effect on the reduction of fertility.[17] The effects of education on fertility become very clear for educational levels of the high school and above. These are due to the postponement of marriage for acquiring higher education. The influence of the husband's education on the wife's fertility is much less than her own education. If factors other than postponement of marriage had any effect on fertility reduction, the husband's educational level would have caused some effect on the wife's fertility which it has not.

Mehrotra, however, does not rule out the possibility of some of the reduction in fertility of the educated women in Kerala being due also to their thinking in terms of family limitation. He illustrates this by the parity progression ratios of the different groups. Table 7 shows the parity progression ratios for women who have completed 15 years or more of married life.

TABLE 7

Parity progression ratios, rural and urban, of women married 15 years and over

Educational level		Parity order									
		0	1	2	3	4	5	6	7	8	9+
Illiterate	Rural	98	97	95	91	85	70	68	61	54	47
	Urban	98	95	94	90	86	78	69	66	61	51
Elementary	Rural	98	97	95	90	83	74	67	61	52	49
	Urban	97	95	93	90	82	76	69	61	59	50
High School	Rural	100	98	93	87	68	70	44	43	67	N.A.
	Urban	94	94	90	69	70	62	70	50	33	33

A comparison *inter se* of the parity ratios in relation to the educational standard would indicate that up to parity order two, the parity ratios vary within a very close range suggesting that people do not care much for restricting family size up to three children. From parity order three onwards, the parity ratios for high school educated and graduates are lower as compared to those of illiterates and primary educated. This shows that educated women are more conscious about restricting family size than the other women.

Thus it will be found that the role of education in fertility reduction is less direct and more complex than the simple inverse correlation suggested by figures. The present state of knowledge on the subject is fragmentary, discontinuous, and sometimes contradictory.

This detracts from its usefulness for any valid generalisations or policy-oriented decisions. Even the effects of education on motivation (an increasingly popular field in family planning research) are blurred by the fact that it is conditioned by a multiplicity of factors including the content of education, the type of school, and the socio-economic background of the student. To give one example, Westoff and others found that Catholic women studying in non-Catholic Colleges are more favourably disposed to family planning than Catholic women studying in Catholic colleges.[17] One thing however emerges clearly from the picture : Up to high school, education does not have any effect on the fertility of women. This is a matter of profound significance to the developing nations faced with population problems. In view of the fact that the mass literacy campaigns of these nations do not envisage education of all its citizens beyond the post-primary level, it will not result in any significant reduction in fertility since such programmes will not reach the critical minimum (High School) required for fertility reduction. However, it is possible that if education at the lower levels is geared to fertility control (by including in the curriculum elements of population education), this may compensate for the shortage in educational facilities at higher levels. As a matter of fact attitude studies indicate that much more than the amount of formal education it is motivation that contributes to the acceptance of family planning norms.

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THE IUD—AN INNOVATION FOR FAMILY PLANNING

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The acceptance of the IUD as a method of conception control to be made available on a mass scale in the national family planning programme, was hailed with great enthusiasm by the medical profession as well as by the lay public. The methods thus far advocated suffered from many insufficiencies, for the technical means offered to solve the problem of preventing births were often cumbersome, requiring repeated use to ensure success or were one-time methods which were almost irreversible. Therefore the advent of the IUD, a one-time method with the added attraction of easy removal when required, could quite readily be termed as an innovation.

The pattern of acceptance of this new contraceptive offered many angles for study. For example, it was of interest to the social researcher and the programme administrator alike to study its overall pattern of acceptance. Researchers have reported that the pattern resembled that of the normal curve when the items of study used were a soft drink or an agricultural innovation. Others reported that the acceptance pattern in other countries resembles a curve which shows a rise, fall and again a rise. In this connection, it was of interest to find out (a) the pattern of acceptance in the Indian situation, particularly among semi-literate rural women, (b) whether any differences in characteristics exist among the clientele who come for the IUD at varying points of time once the programme has been launched, and (c) whether any particular characteristic (s) which may be held responsible for early or late adoption can be isolated. The present paper will confine itself with the first two questions, while the third will be taken up later.

The IUD programme in the Singur area

The investigation reported here relates to the acceptance of the IUD in 20 villages under the Nasibpur Union, Hooghly district, West Bengal. Eleven of these villages are served by the Dearah Union

Health Centre and the remaining nine, by the Nasibpur Sub-Centre. Both these centres are administered by the Rural Health Unit and Training Centre, Singur being the seat of the rural practice field of the All India Institute of Hygiene and Public Health, Calcutta. The study covers the period between January 1965 to December 1968, during which period, IUD services were made available in all the 20 villages in the area through the Union Health Centre, Dearah. Insertions were initially made once a week at this Centre and later, when the programme gained tempo, two clinics were held every week. At the initial stages, mass information about the device and the services was given to all the villages. Eligible couples were approached by the family planning field workers in their homes, while individuals were informed of the service at the family planning and MCH clinics.

Method of study

The study proposed to take as its dependent variable, the time of insertion of the IUD during the 4-year study period. The date of acceptance was recorded in quarterly periods for each year, thereby categorising acceptors under 16 quarters. Certain important variables such as village, religion, age, education of wife and husband, occupation, per capita income, number of living children both male and female, desire for more children and past family planning practices were taken note of with the intention of serving as independent variables.

The information for all items stated above was collected from existing records maintained by the Health Centre and were posted in a proforma prepared for the purpose of this study. The data therefore are secondary in nature and suffer from the inadequacies inherent in such information. This method of data collection saves time and the researcher can utilise the information already available with the agency providing the services. Those desirous of seeking relationships between variables, some of which are vital for the success of programmes but are handicapped with lack of time and funds to pursue prospective investigations can benefit to some measure by studying existing records which are maintained by clinics, hospitals and health centres. This fact was appreciated and the wealth of information in the records of the Health Centre was exploited for the purpose of this study.

Results

Information was collected from 337 acceptors (from 20 villages) who were inserted with the IUD at the Union Health Centre, Dearah during the period January 1965 to December 1968. But during the latter one and half years, i.e. from July 1967 to December 1968 only four insertions were reported, some of the reasons for which will be discussed later, and therefore, the present paper takes into consideration only the first 2½ years.

The frequency distribution of acceptance of the IUD over a period of 2½ years recorded in three monthly intervals, seemed to follow the distribution of Pearson's curve type VI. The acceptors were divided into five groups by calculating the 20th, 40th, 60th and 80th percentiles of the frequency distribution and based on these values the date limits for each group were worked out taking the first insertion as being made on 5th January 1965. The number of cases inserted between these dates were then assigned to groups I to V. The frequency in these groups were 67, 56, 83, 58 and 69 respectively. In as much as the total number of cases is 335, each of these groups should have had 66 acceptors. The apparent differences in the numbers in each group can be explained by the fact that clinics were not held every day but only once or twice a week. The acceptors so grouped are categorised as innovators early acceptors, middle line acceptors, late acceptors and laggards.

It is worth noting that the time taken to accept the device by the acceptors in each of these groups is not the same : innovators took 5 months and 3 days, early acceptors took 1 month and 19 days, middle line acceptors 4 months and 4 days, late acceptors 4 months and 12 days, and laggards 14 months and 22 days. That the first one-fifth of the acceptors (innovators) accepted the device within one-sixth of the study period may well be attributed to the initial take-off time which is required for any programme before it gains tempo. That the early acceptors took only 1 month and 19 days may also be partly explained by the increase in the number of clinics held per week at that time. The time taken by the laggards (nearly half the period under study) could be attributed not only to lethargy but also to the adverse experiences of earlier IUD users which were openly expressed in the community.

The following characteristics of the acceptors in each group were then examined to ascertain if any particular trends were noticeable in the different groups : ages of the husband and wife, literacy status of husband and wife, number of living children and their sexes, desire for more children and previous practice of family planning.

Age : The ages of the husbands and wives were on the average 35.0 and 26.5 years respectively. Innovators with an average of 27.4 years for wives and 36.5 years for husbands were much older than their counterparts in other groups (Table 1). It is apparent from Table 1 that early adoptors are definitely younger compared to the

TABLE 1

Age-wise and group-wise distribution of acceptors and their husbands

Age (years)	Innovators		Early adoptors		Mid-line adoptors		Late adoptors		Laggards		Total	
	Wife	Husband	Wife	Husband	Wife	Husband	Wife	Husband	Wife	Husband	Wife	Husband
Below 19	7(10.4)		9(16.1)		6(7.2)		3(5 2)		5(7.2)		30(9.0)	
				2(3.6)*		1(1 2)*		3(5.2)*		1(1 5)*		7(2.1)*
20 - 24	15(22.4)		23(41.0)		26(31.3)		24(41 4)		18(26.1)		106(31.9)	
25 - 29	23(37.3)	16(23 9)	13(23.2)	18(32 1)	24(29 0)	14(16 9)	15(25 8)	12(20 7)	24(34 8)	10(14 5)	101(30 3)	70(21.0)
30 - 34	7(10.4)	9(13.4)	9(16.1)	16(28.5)	20(24.1)	22(26.5)	13(22.4)	16(27 6)	16(23.2)	22(31.8)	65(19.5)	85(25.5)
35 - 39	12(18.0)	19(28 4)	2(3 6)	10(17.9)	6(7 2)	26(31.3)	3(5.2)	16(27.6)	5(7 2)	23(33.3)	28(8.4)	94(28.3)
40 - 44	1(1.5)	14(20.9)	—	6(10.7)	1(1.2)	12(14.5)	—	6(10 3)	1(1.5)	8(11.6)	3(0 9)	46(13.8)
45 - 49	—	7(10.4)	—	2(3.6)	—	6(7.2)	—	5(8.6)	—	4(5.8)	—	24(7.2)
50 - 54	—	2(3.0)	—	2(3.6)	—	2(2.4)	—	—	—	1(1.5)	—	7(2.1)
Total	667(100.0)		56(100 0)		83(100.0)		58(100.0)		69(100.0)		333(100.0)	
x	27.37	36.48	24.50	33.25	26.82	35.61	26 05	34 16	27.07	35 12	26.46	85.03

* Represents the "Under 25" age-group
Numbers in parentheses represent percentages

others. The apparent difference between innovators and early addptors may perhaps be explained by the fact that when the IUD programme was initiated, people already having large families changed over from other methods, while the relatively younger persons were encouraged by the acceptance of the older group, to accept the device thereafter. It may also be explained by the possibility of recently married couples trying this new one time, reversible method, in preference to other conventional methods requiring repeated use.

Education : The educational status of the husbands of the IUD acceptors has been considered under four categories : those who were literate, those who had received primary education, those with middle school education and those with high school education and above ; the wives were categorised in terms of the first three groups only (Table 2). In the five groups of acceptors the percentage of husbands whose educational status was high school and above progressively decreased from innovators to laggards (29.8 to 15.9). A similar trend was noticeable among the literate wives (34.3 to 18.8). It appears that the education of both husband and wife acts as a favourable factor in the early adoption of the device.

Number of living children : The number of living children on an average varied from 4.0 in Group II to 4.8 in Group III but no definite trend was observed. This was similar when the number of living sons and daughters were considered except that the average number of living sons was consistently higher than that of living daughters in all except one group where it was equal. Studies reporting the acceptance of permanent measures like tubectomy and vasectomy have shown that the clientele had more sons than daughters. It is interesting that this happens to be true in this case as well as where a reversible method is involved. It is universally known that more boys are born than girls. But for this particular group of couples, out of 1,515 living children 816 were boys, giving a sex ratio of 117 males per 100 females which is considerably higher than the sex ratio at birth of about 107 or 108. Is it due to the callousness and indifference of the people towards childhood mortality among girls ? But in Nasibpur Union, from our experience, this does not seem to be so. Alternately, it might be that the group of women considered here had predominantly more living sons than their counterparts in the community. This brings to sharp focus the value placed by Indian couples on male children and the implications of these values in accepting even conventional contraceptives is worth pursuing (Refer Table 7).

TABLE 2

Education-wise and group-wise distribution of acceptors and their husbands

	Innovators		Early adoptors		Mid-line adoptors		Late adoptors		Laggards		Total	
	Wife	Husband	Wife	Husband	Wife	Husband	Wife	Husband	Wife	Husband	Wife	Husband
Illiterate	44(65.7)	15(22.4)	39(69.7)	21(37.5)	63(75.9)	27(32.5)	46(79.3)	20(34.5)	56(81.2)	32(46.4)	248(74.5)	115(34.5)
Literate and Primary	22(32.8)	27(40.3)	13(23.2)	18(32.1)	16(19.3)	29(35.0)	9(15.5)	24(41.4)	11(15.9)	23(33.3)	1(21.3)	121(36.4)
Middle School	1(1.5)	5(7.5)	4(7.2)	2(3.6)	4(4.8)	7(8.4)	3(5.2)	5(8.6)	2(2.9)	3(4.4)	14(4.2)	22(6.6)
High School	—	20(29.8)	—	15(26.8)	—	20(24.1)	—	9(15.5)	—	11(15.9)	—	75(22.5)
Total	67(100.0)		56(100.0)		83(100.0)		58(100.0)		69(100.0)		333(100.0)	

Numbers in parentheses represent percentages

Desire for more children: The desire for more children was elicited from the women and noted in the clinic records prior to the insertion of the device. The replies were categorised as "Yes" or "No" on a normal scale (Table 3). These may well be assumed to be impromptu replies rather than indicative of the mothers' real desire for children. Another factor of significance is that the opinions expressed are those of the wife and do not take cognizance of the husband's opinion. It goes without saying that a couple's desire for more children can be gauged more adequately when the opinions of both partners are considered.

TABLE 3

Desire for more children and acceptance

Desire for more children	Innovators	Early adoptors	Mid-line adoptors	Late adoptors	Laggards	Total
Yes	13 (19.4)*	21 (37.5)	14 (16.9)	10 (17.2)	10 (14.5)	68 (20.4)
No	54 (80.6)	35 (62.5)	69 (83.1)	48 (82.8)	59 (85.5)	265 (79.6)
Total	67(100.0)	58(100.0)	83(100.0)	58(100.0)	69(100.0)	333(100.0)

* Numbers in parentheses represent percentages

Previous family planning practice: Information related to previous practice of family planning methods was limited to either "Yes" or "No" for specific methods used It would have been more informative to know the duration of practice for each method as well as the regularity of use. Previous practice of family planning measures was most prevalent among innovators (47.8%), while the laggards had the least experience of conception control, i.e., 13%, as is apparent from Table 4.

TABLE 4

Previous family planning practice and acceptance

Previous practice of family planning	Innovators	Early adoptors	Mid-line adoptors	Late adoptors	Laggards	Total
Yes	32 (47.8)*	14 (25.0)	18 (21.7)	14 (24.1)	9 (13.0)	87 (26.1)
No	35 (52.2)	42 (75.0)	65 (77.3)	44 (75.9)	60 (87.0)	246 (73.9)
Total	67(100.0)	56(100.0)	83(100.0)	58(100.0)	69(100.0)	333(100.0)

* Numbers in parentheses represent percentages.

An interesting finding was that, while 79.6 per cent of the acceptors did not want any more children, only 26.1 per cent had used contraceptives before accepting the device. If we assume that these latter acceptors were also those who did not want any more children—an assumption which does not seem to be really well taken, there still remain nearly 53.5 per cent who did not want children, but for a variety of reasons did not practise any of the several available contraceptive methods till the IUD made its appearance.

TABLE 5

Characteristics of acceptors in the five groups

Characteristics	Innovators	Early adoptors	Mid-line adoptors	Late adoptors	Laggards	Total
Average age of husband (years)	36.5	33.2	35.6	34.2	35.1	35.0
Average age of wife (years)	27.4	24.5	26.8	26.1	27.1	36.5
Literate wives (per cent)	34.3	30.3	24.1	20.7	18.8	25.5
Literate husbands (per cent)	66.6	62.5	67.5	65.5	53.6	65.5
High school + educated husbands (%)	29.8	26.8	24.1	15.5	15.9	22.5
Average number of living children	4.7	4.0	4.8	4.4	4.6	4.5
Average number of living sons	2.7	2.3	2.5	2.3	2.3	2.4
Average number of living daughters	2.0	1.7	2.3	2.1	2.3	2.1
Desiring more children (%)	19.4	37.5	16.9	17.2	14.5	20.4
Reporting past practices (%)	47.8	25.0	21.7	24.1	13.0	26.1
n =	67	56	83	58	69	333

The results are summarised in Table 5. Innovators and laggards had common characteristics in terms of the age of the wife, and the number of living children, though, innovators were better educated and more of them had had previous experience of family planning in comparison to laggards. However, more innovators than laggards expressed a desire for more children (19.4 and 14.5), though the average number of living children was nearly the same for both groups. It is to be noted than previous practice among innovators has not had an impact on the number of living children as compared to laggards, thereby making one assume that such practices were not adequately followed.

Discussion

Studies of the acceptors of any method of family planning offer various interesting angles of study. While the overall pattern of acceptance of the IUD programme may not be similar to that observed with the introduction of other commodities, it may be worthwhile to investigate whether the villages which came forward for this programme have taken other development programmes as well, e.g., the high yielding varieties of food grains. This area was thought appropriate because the villagers under review are mostly agriculturists as is true for most of rural India, and high yielding varieties of food grains could be adopted for bettering their food output. Thus, these two programmes may perhaps be considered as two different sides of the same coin of economic advancement. The twenty villages studies were considered for community developmental purposes as 14 "mouzas" —a mouza being a revenue unit These mouzas were ranked according to the percentage of acreage under high yielding variety of crops and also according to the percentage of couples adopting the IUD. The correlation coefficient between these ranks did not show any significant association showing thereby that village groups or mouzas considered progressive with respect to one programme did not show a similar trend with regard to the other. However, it may be pointed out here that these two programmes were considered as isolated programmes but in reality the agricultural development programme does not confine itself to high yielding varieties alone, nor does the family planning programme restrict itself to the IUD. Thus, a better approach may have been to work out an "adoption quotient" as developed by Pareek and Chattopadhyaya for these two national programmes in the village groups and then work out a rank correlation coefficient. Unfortunately, however, the data required for calculating the adoption coefficients were not available and, hence, this could not be attempted. The categorisation of the clientele as "innovators", etc., was considered by taking a retrospective view of all the clientele. It may also sound a little innocuous that while innovators took 5 months and 3 days, early acceptors took only 1 month and 19 days. It may be argued that the clientele who took the device in the first n_1 months should be termed as "innovators", and those who came in the next n_2 months as "early adoptors" and so on. In such cases, one should assign values to these, as n_1 n_2, quite arbitrarily, and to a great extent subjectively. But even granting a certain amount of subjectivity, this procedure will not be fair in this case as the frequency of services was not constant throughout. The procedure adopted in this study may thus be considered more objective.

Here the entire clientele was divided into five equal segments Whether there should have been more or less, is a matter of individual opinion. Also in view of the not too significant differences with respect to age, some of the groups could perhaps have been merged, but the distinct trend in the educational status prevented us from merging the groups.

Summary

The acceptance of the IUD programme in 20 villages of Nasibpur Union, Hooghly district, West Bengal, during January 1965 to June 1967, was studied. The particulars of the clientele have been presented. The clientele were divided into five groups, viz., innovators, early acceptors, mid-line acceptors, late acceptors, and laggards, and the characteristics of these individual groups were studied. It was found that early acceptors were younger, previous practice of contraception was more prevalent among innovators and that the percentages of literate wives and husbands having more than middle school education progressively declined in these five groups, from innovators to laggards. More than anything else, education seemed to play a decisive role in the adoption of family planning.

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SOME REMARKS ON IMPROVING THE UTILITY OF KAP* SURVEYS

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Family planning programmes have been introduced, in one form or the other, all over the world. KAP surveys have been and are being planned to assess the progress of the programme. The literature related to family planning programme assessment is full of reports on the results of such surveys and several suggestions on how to carry out the surveys effectively. However, much more has to be done if these studies have to provide guidance in the operation of the programmes. There is need to introduce comparability in design, content and sampling strategy. This paper attempts to make some suggestions on how to improve the utility of these studies whose scope has now extended much beyond the initial stages of the programme. They are expected to provide a deeper assessment of the programme which can lead to a modification of the programme for its betterment.**

KAP studies could serve two broad objectives. The first would be to assess overall progress of a programme and to determine whether the trend in family size and spacing is toward the betterment of family health and well-being, the basic programme goals. The second objective would be to provide clues and indications as to how to run the programme more efficiently. The first type*** would be useful for the planners and the public while the second type has a utility value for the programme implementors ; these will be labelled, for this paper as the "Assessment Objective" and the "Programme Operation Objective."[1] Though there may be a good deal of overlap in the information required for each of the two types of KAP studies, they may be considered separately because of their different objective and differences in their periodicity and their areal coverage.

The first type of study must determine levels and differentials of fertility, prevalence of contraception, ideals about the family formation, and people's attitude toward a programme ; trends in these areas can provide a base-line for adequate assessment of the programme. The tax-payers can have an assessment of the utility of their money. The programme-operation-type, on the other hand, is useful for studying the operation of the programme where programme implementors would like to know . (i) which couples are not coming for the programme and why? (how can they be made to accept the programme?), (ii) which couples had accepted the programme once, but then dropped out and why? (how can they be made to continue longer?), (iii) why do couples change methods ? (can some of the factors responsible for making couples switch from one method to the other be overcome ?) and (iv) whether current users are satisfied with the methods they are using ? (what can be done to remove any dissatisfactions ?). In other words, while the assessment studies are geared to detecting whether the programme is progressing in the right direction, the programme operation type of KAP studies help answer the "whys" of the operation, and can suggest necessary modifications to strengthen the operational aspects of the programme

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* KAP refers to knowledge, attitude and practice of family planning methods.

** The remarks made here are the outcome of my association with the Indian Family Planning Programme The author had the benefit of discussing some of these ideas with Drs K. C Seal, R S Kurup and N R. Parthasarathy who, however, are not responsible for the remarks made herein.

*** Types of KAP studies refers throughout this paper to the two types described above.

KAP Studies for Assessment of the Programme

The major purpose of this type of study is to provide information for assessing the overall effect of the programme of "family planning". The following could be described as the detailed objectives :

1. To measure levels and differentials in fertility and mortality
   a. through annual births and deaths,
   b. through family size-balance of births and deaths.
2. Attitudes and ideals about spacing between successive births—patterns and ideals on family building including age at marriage.
3. Norms of family size.
4. Levels and differentials in family planning practice—specific for various family planning methods.
5. Attitude toward the family planning programme and toward specific methods.

Population to be covered

This survey is expected to provide a picture of changes in fertility, mortality and KAP of family planning. It may be useful to have estimates at the level of major administrative divisions of a country if the resources permit. For instance, in the case of India or the U.S.A. one may consider building estimates at the state level since the State administration may require them for their own social and economic planning. The estimates at the national level should at least be derived. Thus the sample has to be representative of the country or that of each State.

Periodicity

In the initial stages of the family planning activity, a study of this type may be justified once in two years, since the changes are expected to occur slowly. But after sometime, it may become necessary to reconsider its periodicity, depending on its utility in national planning activities and the cost involved.

Sub-objectives

A sub-sample of the main study can be used to examine in detail other phenomena related to fertility, family and family planning. A specially designed schedule dealing with a sub-objective may be administered to a specific group of the sample for more detailed understanding of the phenomena. For instance, it might be interesting and useful to study factors which help in making decisions about timing of the first child after marriage, or the second or third child after the first and second births respectively. Similarly it may be useful to know when and how couples make decisions about using family planning methods for the first time and what factors determine the choice of the method at that time

KAP Studies on Programme Operation

This type of study is basically action-oriented seeking to provide clues for the programme operators about how the programme is functioning and how it can be made to function more efficiently. The content of these studies will be of a probing nature, to determine "why" people behave the way they have been behaving.

Since the objective of this type of study is to understand family planning behaviour it may be suggested that the couples may be grouped separately into a few homogeneous (from the point of view of family planning practice) categories for canvassing separate types of schedules strictly relevant to the group. The following three categories of couples may be relevant for better understanding of the programme :

1. Those who are currently practising family planning (current users).
2. Those who were practising family planning in the past but not now (past users).
3. Those who never practised family planning (never users).

A separate set of questions may have to be posed to couples belonging to each of these categories. A suggested list follows :

A. *Current Users* :

It may be necessary to prepare separate schedules for different family planning methods so that all the relevant aspects specific to the method may be examined. In general these questions will relate to the following aspects (with changes specific to a method):

1. How was the decision taken on practice of the current method ? who was mainly responsible for helping to make the decision ? Where was the family planning service received ? Was this method known earlier, and if so, why was it not practised earlier ? (If the current method is the condom, it may be useful to know the source of supply, how often the supply is received, and how much supply is taken at a time. Such details may be especially useful for a country like India where the condom programme has almost a separate management).
2. Are couples satisfied with the service and why ?
3. Was follow-up adequate, and why ?
4. Were there any complaints related to the method and what was done about them ?
5. Did the couples know of other family planning methods, and why the method currently used was preferred ?
6. Did the couples practice any family planning before ? If so, why have they changed to the current method ?
7. Are the couples fully satisfied, and would they recommend the programme to other friends and relatives ? If no, what modifications are suggested ?
8. If the current method of practice is not terminal, would they like to change the method in the future and why ? What method would they prefer ?
9. Is practice regular ? If not, why not ? What is the pattern of practice of the method ?

B. *Past Users* :

The questions for this group will be similar to those for *Current Users.* In addition, an attempt may be made to determine why they dropped out of the programme. If the reason was method-related, an attempt might be made to determine what the problems were and what type of modifications in the programme would make people continue for a longer period. Also it will be useful to know the couple's future intentions about practice—the type of method, why and when they would try again.

C. *Never Users* :

An attempt is to be made to know why this group has never practised family planning and how they could be made to accept it. What are their ideals about family size and spacing ? What did they intend to do in case they found that their ideals might be exceeded. This group has to be systematically probed to find out :

1. Whether they know some of the family planning methods and how well they understand them.
2 What is their ideal family size ?
3. Whether they are favourable in attitude to existing family planning methods or they have some special demands on the "type" of method they would like.
4 Whether they know of the existing family planning programme and family planning services and their attitudes toward them.
5. Whether mass media has reached them.

Population to be covered

This type of study is to be carried out in the area of operation of a family planning service unit, so that the chief of the operation can get clues for better management of the programme. If it is known that some sub-groups of the population are not accepting the programme, a study of those sub-groups will be useful. In other words, the sample may sometimes be representative of the total area of operation of the service unit and sometimes it may be purposive to cover a specific sub-group. Sometimes it may even be desirable to carry out such a comparative study in a poor-performance area and a good performance one to understand factors responsible for such differential performance and get clues to bridge the gap by improving the poor performance area.

Periodicity

If acceptance of the programme has been poor, studies might have to be carried out more often. It may also be necessary to cover all those areas where response has been especially poor more frequently. If the response is satisfactory, the study can be repeated once a year or so depending upon the availability of resources.

Sub-objectives

This type of study can provide a frame for an in-depth study on a specific group of population through a specially detailed schedule. For instance, one might like to study why some couples are irregular users and how they differ from the group of regular users. Similarly it may be interesting to study couples who switch over from one method to the other.

General Remarks

There are a few remarks related to other aspects of these studies that need to be made. The first is about the accuracy of information available from KAP surveys. Several KAP surveys have been done in almost every country but almost no attempts have been made to determine how the quality of the information can be improved. A part of the time and resources spent on KAP studies should be devoted to methodological studies where experimentation on various approaches for collecting information on different items in KAP surveys should be done. For example, information on age can be and has been collected in several different ways. But no attempt has been made to determine what approach is suited to what circumstances. As a word of caution, it may be added that every question for securing a specific item of information be followed by a detail on it so as to ensure that the answer has been given to the best of the respondent's knowledge. Sometimes the respondents have a tendency to answer half-heartedly and this might lead to random replies.

Secondly, there is the matter of the quantum of information to be collected and its analysis. A general tendency is to collect much more data than is necessary and to analyse it only in part. The quantity of data collected is found to be negatively correlated with its accuracy. Thus it is necessary to decide judiciously the requirements of the study and limit the data collection to what is required. Once data are collected, all efforts should be made to exploit it fully for every relevant inference. The current trend is to confine analysis to some frequency distributions and cross-tabulations. Interpretation from these limited tabulations is then confined only to the sample, but it is often of more interest to relate the distribution obtained from the sample to the population as a whole from which it has come. For instance, parity distribution of acceptors from KAP surveys is only one way of looking at the data. But relating acceptors of each parity to those available in the general population would be meaningful for discovering which parities are accepting the programme more than others. Similarly one may like to know which educational groups show relatively lower acceptance of the programme.

In the end it should also be stated that the results of KAP studies should be made available quite rapidly. The changes in general, occur quite fast so it is necessary to report the results before they become obsolete. This factor is often overlooked.

ATTITUDES OF ARMED FORCES' PERSONNEL TOWARDS FAMILY PLANNING*

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Introduction

The collection of data on knowledge, attitude and practice of family planning among a group of people helps one to understand the degree of prevalence and potentiality of acceptance regarding family planning among that group. With this in view, the present fertility and family planning enquiry was undertaken during March-July 1971 among the military personnel in Lucknow Cantonment. Except for a study conducted in 1969 on a sample of 230 ever married women in Poona Military Cantonment[1] the fertility behaviour of the military population has not been explored. The present study based on a substantial number of interviews (1,503) with the Lucknow military population applies a deeper probe into the differentials of fertility behaviour, its determinants and family planning acceptance.

Methodology

The Cantonment of Lucknow is one of the important peace stations of the Armed Forces. It is the seat of the Headquarters of the Central Command and of the Army Medical Corps Training Centre, School and Records. In addition, there are a large number of units including the Command Hospital, Central Command, and the Base Hospital.

The Cantonment of Lucknow has fifteen family lines where married JCOs (Junior Commissioned Officers), NCOs (Non-Commissioned Officers) and ORs (Other Ranks) have been allotted accommodation. The standard and size of accommodation varies with the rank. With the exception of NCsE (Non-Combatant Enrolled), every quarter is provided with a minimum of two rooms, a small kitchen or space, and an open or closed bathroom. Most of the quarters are provided with a latrine and chlorinated water supply.

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* Based on the M D thesis (Lucknow) in Social and Preventive Medicine, of the first author.

The medical facilities are adequate and free. Each family is provided medical amenities both at the clinic and in the hospital. Most of the deliveries are conducted in the Military Hospital, the family planning services being provided by one well established Central Family Planning Welfare Centre.

Sample : A preliminary census conducted in the Cantonment area revealed that it was inhabited by about 1,600 families. Though all of them were included in the present survey, only 1,503 could be contacted and consequently data was obtained from these families regarding fertility, mortality and family planning practices, through personal interviews with the husbands.

Results

Attitude to family planning: Nearly 94 per cent of the population displayed a positive attitude towards family planning. Only a meagre proportion (less than one per cent) expressed their outright disapproval of the family planning programme. The proportion indifferent towards family planning was also very small (about 6%). About 0.5 per cent were against the concept of family planning.

To bring out the differentials in family size preferences, the number of children desired by the respondents was identified with their social and economic characteristics.

The results are presented in the following paragraphs :

Religion: The data presented in Table 1 shows that the mean number of children preferred by different religious groups did not differ significantly. Among those who preferred to have two children, Christians formed the highest proportion (33.3%), followed by Hindus (22.7%) and Muslims (13.2%). Muslims formed the highest proportion (76.3%) of all those who preferred to have three children. Moreover, about 63 per cent of the respondents preferred to have three children and 22.2 per cent two children.

Age of husband: It was interesting to note that the proportion of males who wanted three children varied indirectly with their age while the proportion desiring four children, varied directly with age (Table 2). For example, about 73 per cent of the males aged 20-24 preferred a three—child family as compared to about 63 per cent aged 35-39 and 53 per cent aged 40 and above. Of those who wanted four chilren, 4.8 per cent were aged 20-24 as compared to 21.2 per cent aged 40 and above. The latter finding, i.e., the preference for larger numbers of children with an increase in age is a little intriguing.

TABLE 1

Preferred number of children by religion

No of children preferred	Hindu	Muslim	Christian	Sikh	Total
One	12 (0.9)	—	—	—	12 (0.9)
Two	303 (22.7)	5 (13.2)	12 (33.3)	15 (15.3)	335 (22.2)
Three	860 (64.7)	29 (76.3)	19 (52.8)	71 (72.5)	980 (65.1)
Four	132 (9.9)	4 (10.5)	4 (11.1)	12 (12.2)	152 (10.1)
Five	18 (1.5)	—	1 (2.8)	—	19 (1.3)
Six and above	5 (0.3)	—	—	—	5 (0.3)
Total	1330 (100.0)	38 (100.0)	36 (100.0)	98 (100.0)	1503 (100.0)

Numbers in parentheses represent percentages

TABLE 2

Preferred number of children by age of husband

No of children preferred	Age of husband (years)				
	20 - 24	25 - 29	30 - 34	35 - 39	40 and over
One	1 (0.4)	3 (0.5)	2 (0.7)	3 (1.6)	3 (2.0)
Two	46 (20.3)	163 (24.5)	60 (22.3)	36 (19.1)	30 (19.9)
Three	165 (72.7)	438 (65.7)	78 (65.8)	118 (62.8)	81 (53.0)
Four	11 (4.8)	53 (8.0)	26 (9.7)	20 (16.0)	32 (21.2)
Five	4 (1.8)	6 (0.9)	4 (1.5)	1 (0.5)	4 (2.6)
Six and above	—	3 (0.4)	—	—	2 (1.3)
Total	227 (100.0)	666 (100.0)	270 (100.0)	188 (100.0)	152 (100.0)
Average	2.8	2.8	2.8	2.9	3.0

Numbers in parentheses represent percentages.

Income: The percentage of respondents preferring two children varied between 20 to 25 and the proportion preferring three children varied between 64 per cent to 66 per cent for all income ranges. No significant trend could be inferred from this analysis. Very few respondents wished for five and more children (Table 3).

TABLE 3

Preferred number of children by income

No of children preferred	Income in rupees				
	Up to 200	201 - 300	301 - 400	401 - 500	500
One	1(0.3)	6(0.7)	3(1.4)	—	2(13.4)
Two	68(20.4)	209(23.0)	48(22.5)	6(25.1)	4(36.6)
Three	197(62.4)	618(66.5)	145(63.9)	13(54.2)	7(46.6)
Four	44(14.1)	78(8.5)	24(11.3)	4(16.5)	2(13.4)
Five	7(2.2)	10(1.1)	2(0.9)	—	—
Six and above	2(0.6)	2(0.2)	—	1(4.2)	—
Total	319(100.0)	923(100.0)	222(100.0)	24(100.0)	15(100.0)

Numbers in parentheses represent percentages

Education of husband: The cross tabulation of the educational level of the husband with family size indicates that the preference for two children was largely displayed by males who had had higher education as compared to those who were illiterate or belonged to low educational levels. As a testimony to the fact one again finds that the largest proportion of illiterate males expressed a desire for four and more children (20.4%) as compared to those who had received high school education and above (Table 4).

Number of living children: The number of living children which a couple already has is likely to have a greater impact upon their desire to have a specific number of children. The analysis indicates that only 1.8 per cent of those who had one living child did not want any more children while the majority, i.e., 92.3 per cent wanted two to three children. Of the males who had just two children, about 21.6 per cent were satisfied with that number while about 67.3 per cent wanted one more child. It was observed that as the number of living children of the respondents increased, the proportion of respondents preferring smaller families than what they had already achieved also increased. The gap between the preferred number of children and their actual performance is a sufficient indication of the emergence of the small family norm, and only future studies will tell, if this gap has narrowed further (Table 5).

Rank: An analysis according to rank reflective of the service status was found to reveal crude differences with respect to preference of children (Table 6). For example, about 67 per cent of the Sepoys (SEP) preferred three children as compared to 57.1 per cent of Subedar

TABLE 4

Preferred number of children by husband's education

Io. of hildren referred	Level of education of husband						
	Illiterate	Literate	Primary	Junior H S	High School	Inter	B A
)ne	2(1.6)	—	1(0.4)	2(0 8)	7(1.2)	—	—
Two	13(10.2)	23(13.6)	56(20.1)	57(23.8)	148(26.0)	23(27.4)	15.(37.5)
Thı	87(68.0	'3.4	'5 62.6	50(62 8)	378(65.3)	54(63 1	24 60 1)
Four	23(18.0	8 1.0	38 3	28(11.7)	39(6.8)	6(7 1	
F.	2(1.6	3	2.9	2(0.8)	2(0 4)	1(1 2	2.4
Six and above	0.8		0.4		0.4)	1(1	
Total	28 00	6 00.	279 00.0	239 00	00 0)	85(100	

Numbers in pı 'presen' 'nta

TABLE 5

Preferred number of children according to the number of living children

Preferred number of children	Number of living children							
	0	1	2	3	4	5	6	7
One	3 (0.7)	7 (1.8)	—	1 (0.5)	—	1 (2.1)	—	—
Two	122 (30.0)	109 (27.5)	66 (21.6)	16 (8.0)	15 (13.2)	5 (10.4)	2 (9.1)	—
Three	268 (65.5)	257 (64.8)	206 (67.3)	144 (71.5)	58 (50.8)	30 (62.4)	12 (54.5)	5 (57.1)
Four	13 (3.2)	20 (5.1)	30 (9.8)	34 (17.0)	39 (34.2)	9 (18.8)	6 (27.3)	1 (14.13)
Five	2 (0.5)	3 (0.8)	3 (1.0)	5 (2.5)	2 (1.8)	3 (6.3)	—	1 (14.13)
Six and above	—	—	1 (0.3)	1 (0.5)	—	—	2 (9.1)	1 (14.13)
Total	408 (100.0)	396 (100.0)	306 (100.0)	201 (100.0)	114 (100.0)	48 (100.0)	22 (100.0)	8 (100.0)

Numbers in parentheses represent percentages

Majors and 59.0 per cent of the Subedars. Larger proportions of males belonging to lower ranks expressed preferences for larger number of children than those of higher ranks. Such a remark is well established by the larger proportion preferring four children and above, among NCsEs (35.6%) as compared to only 14.3 per cent in the case of Subedar Majors.

Reasons for preferring upto three children: Inadequate income was found to be the most important reason influencing 85.6 per cent of the respondents to decide to have three or fewer children. It was also evident that mainly economic considerations and the desire to bring up the children well were entertained by those males desiring small families. A small family was also equated with a happy family by 9 1 per cent of the respondents (Table 7).

TABLE 7

Reasons for preferring upto three children

Reasons	No of respondents	Percentage based on 1,503 cases
Inadequate income	1,283	85.6
Better child care and education	1,150	76.5
Better standard of living	686	45.6
Less worries with small families	137	9.1
Sons for old-age care	63	4.3

Attitudes towards spacing: Attitude towards preferred inter-birth spacing reflects the general attitude of the people towards family building as such. It was observed that about 4.6 per cent preferred to have an inter-birth spacing. It is also of interest to observe that about 19.2 per cent of the respondents expressed their preference for inter-birth spacing of at least five years, 22.5 per cent of four years and a little more than half of the males (53.4%) of three years. Though the results have their limitations, it could be assumed that at least 42 per cent of the males who preferred to have an inter-birth spacing of four years can easily be motivated to adopt methods of birth control to achieve their spacing preferences.

Reasons for spacing: On being asked about the reasons for wishing to space their children, the majority of males (95%) thought that the health of the infant and mother would be duly protected through prolonged inter-birth spacing. The respondents gave a number of other reasons which are given in Table 8.

TABLE 6

Preferred number of children according to rank

Preferred number of children	Rank of respondents							
	NCsE	SEP	L NK	NK	HAV	N SUB	SUB	SUB MAJ
One	1 (2.0)	3 (0.7)	—	2 (0.8)	3 (0.9)	2 (1.8)	—	1 (14.3)
Two	16 (15.4)	108 (23.4)	48 (22.0)	60 (24.0)	69 (21.6)	24 (22.0)	9 (23.1)	1 (14.3)
Three	50 (48.1)	308 (66.8)	148 (70.1)	166 (65.6)	214 ((66.9)	67 (61.5)	23 (59.0)	4 (57.1)
Four	29 (27.9)	36 (7.8)	13 (6.2)	23 (9.2)	29 (9.0)	16 (14.7)	6 (15.4)	—
Five	5 (4.8)	5 (1.1)	2 (0.9)	1 (0.4)	5 (1.6)	—	—	1 (14.3)
Six and above	3 (2.8)	1 (0.2)	—	—	—	—	1 (2.5)	—
Total	104 (100.0)	461 (100.0)	211 (100.0)	252 (100.0)	320 (100.0)	109 (100.0)	39 (100.0)	7 (100.0)
Average	2.3	2.8	2.8	2.8	2.8	2.8	3.0	2.8

NCsE = Non-Combatant Enrolled, SEP = Sepoy, L/NK = Lance Naik,
NK = Naik, HAV = Havildar, N/SUB = Neb Subedar,
SUB = Subedar, SUB MAJ = Subedar Majors
Numbers in parentheses represent percentages

TABLE 8

Reasons for spacing

Reasons for spacing	Number	Percentage
Better care for the previous child and better care for the next child	166	11.1
In the interest of the mother's health	24	1 6
With less spacing all children will be neglected	3	0.1
With less spacing the children will grow up with little age difference and the burden of their education will be heavy when they grow up	3	0 1
Combined reasons of first two items, i.e , better care of the younger children and mother's health	1,226	81.6
Combined reasons of items 1, 2 and 3	41	2.8
Combined reasons of items 1 and 3	12	0.8
Combined reasons of items 1, 3 and 4	11	0.7
Combined reasons of items 1, 2, 3 and 4	5	0 3
No reasons	15	1.0

Attitudes toward abortion: In the present survey, information was also collected about the desirability or otherwise of resorting to abortion as a method of family planning. The data indicates that a little less than half of the respondents (49.2%) approved of abortion unconditionally and about 24 per cent conditionally. Of those who approved, the majority (95.3%) opined that abortion could be resorted to, if necessary, to protect maternal health, and the rest, if the procedure was safe enough. About 18 per cent were really against it and about 9 per cent did not express any opinion. The data revealed that, in general, their attitude towards abortion is quite favourable

Discussion and conclusions

The present survey of the Army personnel reflects a favourable attitude towards family planning. The Lucknow Intensive Fertility Survey (IFS) also indicated that only 8 per cent of the sample males did not endorse a favourable attitude towards family planning Such a favourable atmosphere in the civil and Army population speaks well of the family planning programme. The data also indicated that the majority of males preferred to have two/three children (87.3%) while the Poona Army Survey (PAS) indicated that about 84 per cent preferred a two/three child family. These results indicate a growing appreciation of the small family norm among younger males which finding was also brought out in the IFS. The education of the male and the family's income were found to vary indirectly with preferred size of the family in the present survey as also in the IFS which indicated a greater desire for additional number of children among those women who belonged to lower income groups and had lesser education. It was found that the couples desiring a larger number of children wanted more of them to be sons and this result is also verified by the PAS wherein the desire to have more children decreased with the presence of more living children/sons. More than three-fourths of the males, in this study, however, preferred to have 3-4 years of spacing as compared to about 52 per cent in the PAS sample.

It was interesting to observe that 49 per cent of the males approved of abortion unconditionally and 24 per cent conditionally whereas 17 per cent were against it and 9 per cent were indifferent. The IES noted that nearly 8 per cent of the females supported liberalisation of abortion, 75 per cent could not express any opinion and 17 per cent opposed it. The respondents who approved of abortion insisted on the availability of proper medical precautions to minimise operational hazards.

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DEMOGRAPHIC DESCRIPTION OF A RURAL AREA

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Introduction

The Rural Family Planning Project is sponsored by the Family Planning Association of India at the Allahabad Agricultural Institute. The project commenced its operations in 1971 and covers an estimated population of 1,60,043 in 499 villages in the southern part of Allahabad District.

The objectives of the project are: (a) to strengthen the inputs already being made by the national family planning programme, (2) to experiment with new inputs; and (c) to learn from the experience so as to enable a wider implementation through similar non-governmental programmes.

One of the first activities of the project was to conduct a baseline survey to provide data for programme planning, continuous monitoring and final evaluation (for the latter purpose a repeat survey will be carried out towards the end of the project). The survey, conducted in 1971 sought to establish baseline parameters for demographic, fertility and contraception variables. This paper presents the demographic profile of the rural area and examines its implications for ,conducting population programmes and family planning administration. Other findings pertaining to fertility behaviour and contraception will be published subsequently.

Methodology

For demographic data the sampling unit was the household. Fertility behaviour was determined for couples in the reproductive age group in the sampled households. A list of all the households in the area was prepared. From this list a systematic sample (every 10th) of 2,937 households was taken.

Survey objectives were defined and interview instruments prepared accordingly. Data collection, including re-visits for verification was completed in three months. Interviewing was done by eight male and eight female staff who were provided adequate training in interviewing techniques. The reference period was from Diwali 1970 to Diwali 1971 (end of October), i.e., from one prominent festival to another rather than the calendar year, so as to help informants to place vital events more correctly.

All schedules were scrutinised on a cent per cent basis and referred back to the field for verification when necessary. Since this was an on-going project, this facility was possible and considerably enhanced the quality of data.

The data was extracted from the interview instruments and transferred to code sheets. The code sheets were sent to the Computer Centre, Planning Commission, New Delhi, for punching and subsequent tabulation.

1. Age and sex distribution

The proportion of males and females in the various age groups is given in Table 1 and rendered into a pyramid in Figure 1. As can be expected in an underdeveloped area with sustained high fertility, the pyramid is broad based and tapers sharply at the higher age groups Forty-four per cent of the population is below the age of 15 years and 12.9 per cent is over 50 years.

TABLE 1

Per cent distribution of population by age and sex

Age group in years	Males	Females	Total	Sex ratios F/M
0-4	15.2	16.6	15.9	0.992
5-9	16.5	16.1	16.3	0.881
10-14	12.4	12.0	12.2	0.869
15-19	8.4	7.0	7.7	0.754
20-24	6.5	8.4	7.4	1.156
25-29	7.3	7.3	7.3	0.908
30-34	6.3	6.6	6.5	0.954
35-39	6.0	6.0	6.0	0.907
40-44	4.7	3.9	4.3	0.762
45-49	3.7	3.4	3.6	0.825
50-54	3.7	4.1	3.9	1.003
55-59	2.4	2.6	2.5	0.986
60-64	2.9	2.5	2.7	0.774
65 and above	4.0	3.5	3.7	0.785
All ages	100.0	100.0	100.0	0.904
n	8730	7894	16624	

The dependancy ratio, calculated with the upper cut-off point at 50 years is 1.34—a high figure.*[1]

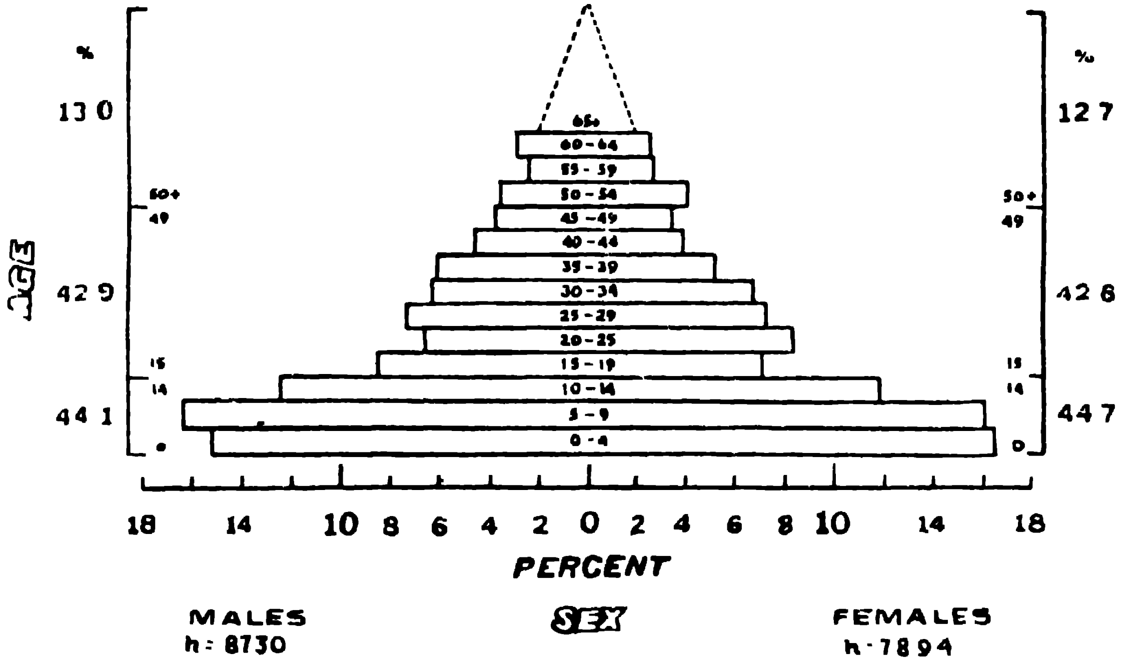

Figure 1

Age and sex distribution of sample population

The sex ratio of 904 females per 1,000 males—compares with that of the State of Uttar Pradesh—909 and India 941[2]. There are more males than females in almost all the age groups probably due to higher mortality among women during infancy and the child bearing ages.

There is a lower proportion of males in the 0-4 years age group. This is almost similar to the Census of India for Allahabad District taken ten years earlier (1961) and can only be explained by over estimation of the age of male babies.

The proportion of males drops suddenly in the age group 20-24 years and increases again in the next higher age group. There is a similar phenomenon among the females in the age group 15-19 years In the Census of India figures for Allahabad District, taken in 1961, a similar phenomenon was observed for both sexes and in the same age groups.

These proportions were subjected to statistical testing. When the two age groups (15-19 and 20-24) were tested separately, the differences were statistically significant. However, when these two age groups were pooled, there was no statistical significance. This phenomenon is thus probably due to misreporting of age among these two age groups. It is at these ages that frequently men seek employment and marriages are arranged for girls and the misreporting may be deliberate.[3]

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* The upper cut-off point at 50 years instead of 60 and 65 years is more reasonable for developing areas. The length of time a man stays in the labour force depends on the life expectancy in the area and obviously it is lower in this area as compared to developed countries.

2. Population density

The total population in the RFPP area, estimated on the basis of the survey is 1,66,240. This is close to the actual figure, 1.60,043 obtained from the household list. The area is 793 sq. km. giving a population density of 209 persons per sq. km. or 543 per sq. mile This is a rural and agrarian area without any towns or cities.

3. Proportion of currently married women

There are 178 currently married women per 1,000 population.

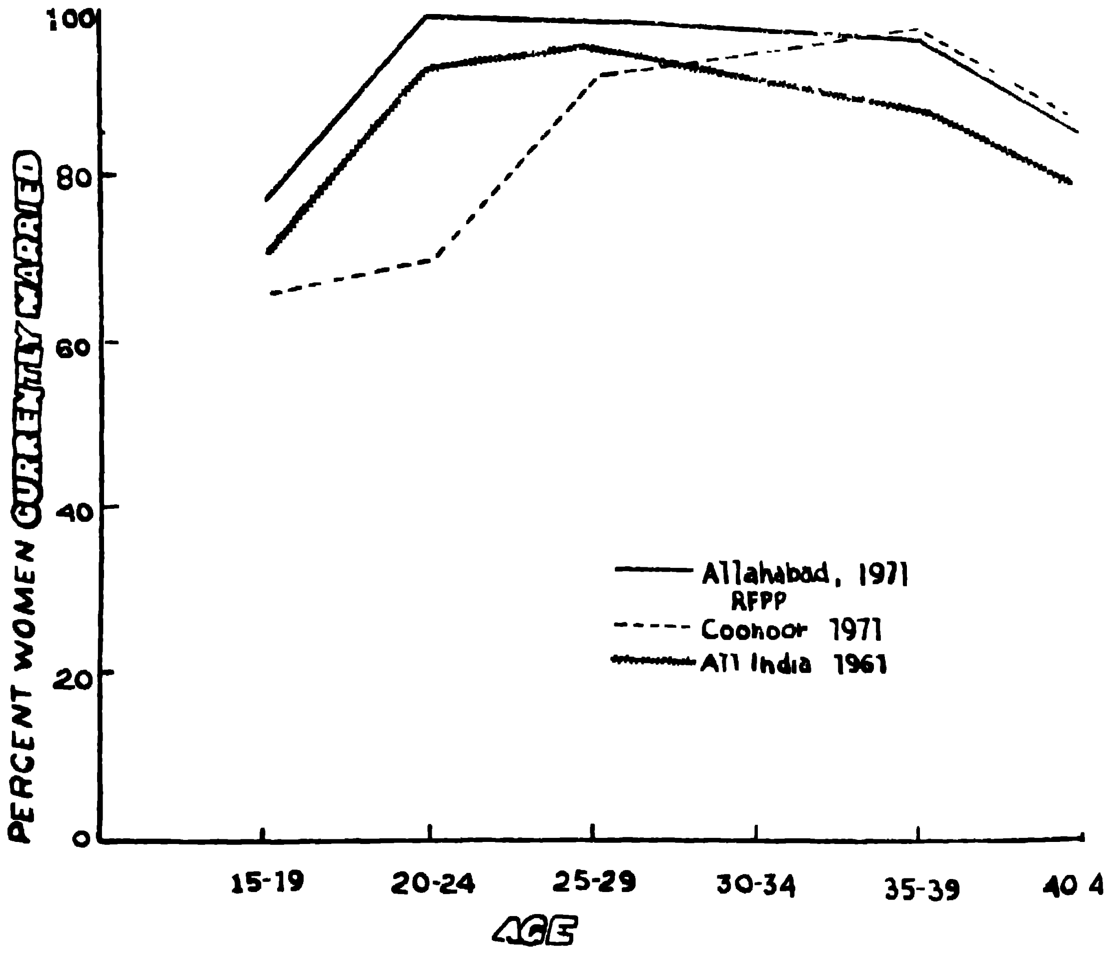

Figure 2

Currently married women by age

Source : S P Jain, 'Indian Population Situation' National Council of Education Research and Training, Sri Aurobindo Marg, New Delhi-16, 1971

Coonoor, 1971, 3 Tea Estates UPASI, Dr Rahmathullah Personal Communication, 1972.

Figure 2 shows the proportion of currently married women to all women in each of the five-year age groups in the RFPP area and compares it with all India data and a study conducted in Coonoor, South India. Currently married women, are, by definition, those who are living with their husbands, and excludes those who, though married have not had the "second marriage" or *gauna*, are still living with their parents, and their marriage is yet to be consummated. In the RFPP area, girls marry and are exposed to the risk of pregnancy at younger ages. A higher proportion of all women in almost all the age groups are currently married. A higher General Fertility Rate can thus be expected from this fact alone.

If the data from Table 1 and Figure 2 are considered together, the number of target couples—currently married women—can be projected for 1976. There were in 1971, 28,520 such women. By 1976, the end of the project's five years, there will be 33,480—an increase of 17 per cent.* This is significant for programme evaluation. A programme aimed at a 20 per cent contraceptive prevalence rate (CPR) on 1971 figures, will because of the increase in the number of currently married women, give a 17 per cent CPR in 1976. Recruiting 5,700 couples for contraception (20% of 28,500) will leave, approximately as many women unprotected in 1976 as there were in 1971.

4. Education and literacy

Twenty-two per cent of all adults—(over 20 years) were literate (Table 2). The difference between the literacy rates among males and

TABLE 2

Per cent distribution of adults (over 20 years of age) by sex and education

Education	Males	Females	Total
Illiterate	61.5	96.1	78.0
Literate	12.3	1.6	7.2
Upto Primary (5 years)	12.2	1.5	7.1
Upto Secondary (8 years)	5.3	0.4	2.9
Upto High School (10 years)	4.4	0.3	2.5
College and above	4.3	0.1	2.3
Total	100.0	100.0	100.0
n	4149	3817	7966

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* This assumes that between 1971 and 1976, there will be (a) no change in the proportion of currently married women to all women in the respective age groups, (b) net migration will be zero, (c) age specific death rates will not change. All three assumptions are reasonably valid.

females (38.5 and 3.9% respectively) is significant. Among the males 12.3 per cent were just literate, and only 8.7 per cent had gone to high school and college. The corresponding percentages for females were 1.6 and 0.4 respectively.

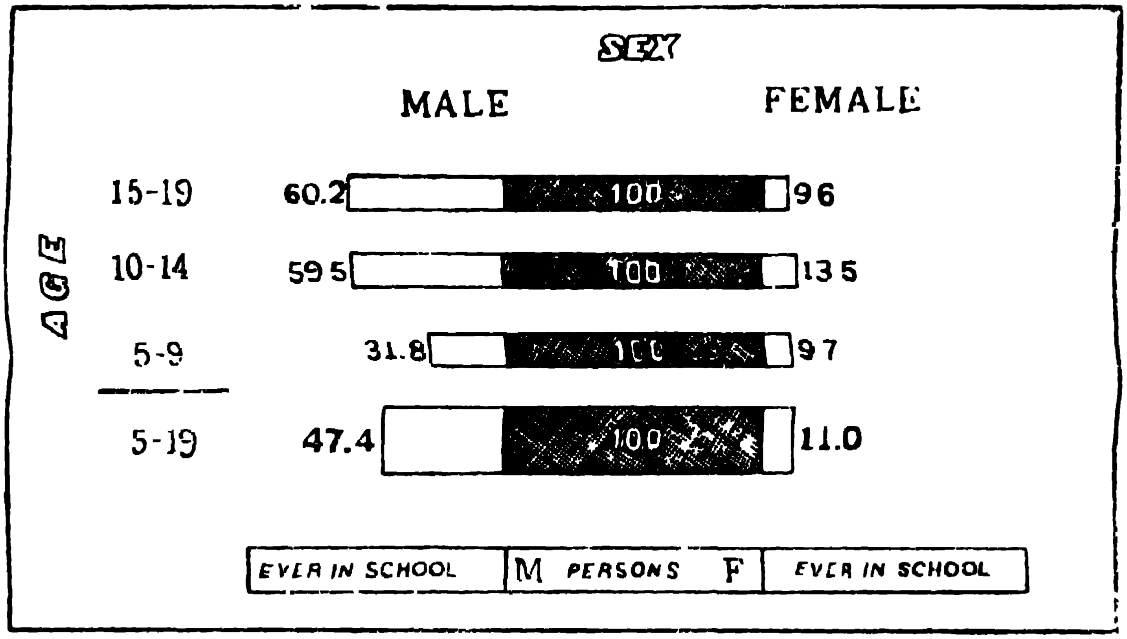

Figure 3
Schooling by age and sex during formative period, h — 6023

Figure 3 shows the percentage of children (5-19 years) who are going or had ever gone to school. A rise in the educational attainment can be expected for the coming generations, but for the forseeable future, school education will be the privilege of a minority and largely concentrated among males.

In this milieu, the use of printed material has severe limitations and inter-personal communication—a slow and expensive process—is more likely to be effective and will require the major share of effort and resources. Printed material—such as may be used—will have to be pictorial rather than written.

The use of local village women for programme communication is also limited by the low level of literacy among them. Some degree of literacy is necessary to maintain minimal records and to be able to understand elementary contraceptive technology. Education provides not only skills in the three R's but is also a prerequisite for vertical mobility.

5. Religion and caste

There are mainly two religious groups in the RFPP area, Hindus 92 per cent and Muslims 8 per cent. Of the former, 19.1 per cent were high caste Hindus, 37.6 per cent middle or backward, and 35.3 per cent belonged to Scheduled castes or tribes.

The religion and castewise composition of the population needs to be known to complete the demographic profile and to subsequently determine fertility differentials. Programme administrators often have to face questions about fertility and family planning acceptance among various religious groups and sub-groups and a meaningful response can only be given if the population composition is known.

6. Household size

The number of members in the sample households was determined using the Census of India definition of a household—members sharing a common cooking facility. Almost invariably, however, the household included only the family members and thus the household and family may be considered synonymous.

The majority (54.8%) had less than five members and very few (1.3%) had 16 or more members. Of the remaining, 39 and 4.9 per cent respectively had 6-10 and 11-15 members respectively. The average membership of a household was 5.6 persons closely approximating that found in the PRAI study in which the average was 5.1 persons.[4]

7. Type of family

The type of family, the number and generation of cogenitic relatives under one roof has an important bearing on fertility and contraceptive practice. Little is known however of the nature of this association. Determining the distribution of households by the type of family occupying it will facilitate future analysis.

Three family types have been identified :

(a) Nuclear families consisting of husband, wife and dependant children,

(b) Joint families—comprising of more than one earning brothers, their wives, children and parents, if living, and

(c) Stem families—which is a reduction of the joint family and consists of only one earning son, his wife, dependant children and one or more parents.

In the RFPP area over half (58%) of the households were occupied by nuclear families comparable to 60 per cent as determined by the PRAI study[5]. There were 881 (30%) stem families and only 361 (12.3%) joint families. Trends over a period time of the prevalence of nuclear families, indicate social and economic change.

8. Occupation

The main occupation of all adults (over 20 years of age) was determined for both males and females and is presented in Table 3. Agriculture is the main occupation of 49.7 per cent of the males and an additional 15.3 per cent were engaged as agricultural labourers. Service—defined as fixed salary employments—employed 15.2 per cent of the adult males.

TABLE 3

Per cent distribution of adults (over 20 years of age) by sex and main occupation

Main occupation	Males	Females
Farming	49.7	14.1
Service	15.2	0.1
Bidi making	4.1	0.8
Agricultural labourers	15.3	10.9
Petty traders	4.6	1.1
Housewives	—	65.8
Students	1.8	—
Others	5.8	1.3
Unemployed	3.5	5.9
Total	100.0	100.0
n	4149	3817

During the reference period, 3.5 per cent of the adult males could find no employment. This cannot be taken to reflect the prevailing unemployment and under-employment in this area for the following three reasons : (1) most unemployed persons migrate to the urban areas to seek employment ; (2) those possessing land have been excluded, and thus this number of unemployed is among those adult males in this area who do not possess any land (8.4% of the households do not possess any land) ; (3) the median landholding is 2.5 acres, an amount of land, considered in this area, to be inadequate to support the median family size of 5.6 persons.

9. Comparisons

Table 4 presents some of the demographic and fertility characteristics in this area as compared to the findings under study and the all India data.

TABLE 4

Comparative table of selected demographic and fertility characteristics

Characteristics	RFPP area	All India	Other studies
Crude birth rate/1,000 population	50.2	41.7†	45.6*
Crude death rate/1,000 population	17.4	22.8†	
Annual growth rate	3.3%	2.5%†	
Infant mortality rate/1,000 live births	181.5	125 0‡	
General fertility rate/1,000 women	190.4	N A.	
Marital fertility rate	261.8	244.0‡	268 3*
Total fertility rate/1,000 women	7752	5181†	
Per cent distribution of population by age :			
Under 15 years	44 3	40 9†	40.1*
15 to 49 years	42.8	47.3†	47.3*
50 years and above	12.9	11.8†	12.6*
Dependancy rates	1.3	1.1†	1.1*
Density per sq. km.	209	182†	

* Planning Research and Action Institute 'Four years' report of the Fertility Behaviour in 62 villages of Chinhat and Mohanlal Ganj" PRAI, Planning Department, Uttar Pradesh—Mimeo, June 1969

†S N Agarwala, *India's Population Problems*, published by Tata-McGraw-Hill Publishing Company Ltd, and printed at Delhi Press, Rani Jhansi Road, New Delhi-55, 1972

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It is obvious from this comparison that RFPP operates in a high fertility area with all the associations of economic backwardness. The task is rendered more difficult by the low literacy and high infant mortality. Family planning programmes in this area can work better through the medium of agriculture which is the concern of the adult population.[1] These programmes must also deal with the high rates of infant mortality and low standards of general health. The use of printed media being limited by the low level of literacy among females, programmes must rely more heavily on inter-personal communication.

ACKNOWLEDGEMENTS

A survey of this size is a major undertaking requiring dedicated team work. The staff of RFPP worked as a team of which any leader can be proud. Acknowledgement is also made to the help and advice received from Dr. R. S. S. Sarma of the Johns Hopkins Rural Health

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SOME ASPECTS OF THE BIHAR MASS VASECTOMY CAMPS

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The Ernakulam and the Gujarat mass vasectomy campaigns established a landmark in the Indian family planning programme by their commendable performance. Following these, mass vasectomy camps were held on similar lines in Bihar State at Muzaffarpur, Monghyr, and several other places. During the implementation phase of the camps, a study of the type described below was undertaken to provide a constant feed-back regarding the complications and shortfalls of the programme so that the administrators could introduce desirable changes in the plan of operation in order to achieve better results. It was also thought that such a study would be useful for programme planners in planning future camps.

The present study aimed at eliciting information regarding the suitability of cases taken up for operation during mass vasectomy camps with particular reference to the age of the acceptor and his wife, the number of living children, post-operative complications and their management, the use of Nirodh after the operation, and the number of births prevented as a result of the operation.

Universe and sample

The study was undertaken when the mass vasectomy camps in Muzaffarpur and Monghyr in Bihar were in progress and figures of the achievements were pouring into the Regional Health Office. As a result, due to lack of time, no specific design could be prepared and 400 cases from the nearby blocks of both camps were interviewed on the basis of purposive sampling.

In Monghyr, some methodology for choosing the sample cases was adopted. Since the programme included the giving of a "dhoti" as an incentive to the acceptor at the time of removal of the stitches, it was expected that complications would be treated at the block level by the Block Medical Officers. The cases interviewed belonged to the group operated between 7th to 16th February. At Kharagpur, Tarapur and Sangrampur blocks, the acceptors were interviewed at the Block Headquarters. Unlike the Monghyr camp, no incentive by way of a "dhoti" was distributed to the acceptor at the time of stitch-removal and hence only 150 cases could be interviewed at the Muzaffarpur camps.

Data collection

A questionnaire was prepared for interviewing the cases. The schedule was pre-tested and modified as per the requirement of the present study. The cases were contacted and interviewed by the staff of the Regional Health Office (GOI), Patna, on the day the stitches were removed. Some difficulties were faced by the investigators in finding out the ages of the respondents and of their wives. Hence a few additional questions were asked so as to elicit the correct information by depth interviews, e.g, the acceptor's age at the time of the earthquake in Muzaffarpur and Monghyr (in 1934), the age of his eldest and youngest children, his age at the time of marriage, and if his wife was getting her monthly periods and if not, since when.

Limitations of the study

Since about 49,000 operations were performed at the mass vasectomy camps in about four districts of Bihar State, a sample of the size of 400 cases might not justify the drawing of any generalised conclusions. Moreover, most of the cases complained of more than one complication associated with several minor complaints. Hence, the need for taking precautions at least against major complications in camps to be held in future has been suggested. Further, the interviewer was accompanied either by the Medical Officer in charge of the local blocks or the workers, while interviewing the cases in the area. This sometimes acts as a barrier in the flow of communication and the bare facts of the case tend to remain undisclosed.

Results

Age of acceptor: More than half of the cases operated at these camps were below 39 years of age. When their depth interviews were taken only 38.5 per cent were found to belong to the 25-39 age group, their modal age group being 40-44 years.

The difference in age of the acceptors as elicited by depth interviews and as recorded at the time of registration in the camps throws some light on the accuracy or otherwise of the entries in the Eligible Couples Registers completed and maintained at the block level.

TABLE 1

Age of acceptors recorded at camps and after depth interviewing

Recorded age group (in years)	Age group after depth interviewing (in years)								
	25-29	30-34	35-39	40-44	45-49	50-55	56-60	61-65	Total
25-29	7	1	2						10
30-34		63	2	9	7	2	3		86
35-39			79	12	11	5			107
40-44				76	18	23	5		122
45-49					34	17	5	1	57
Above 50 years						16	2		18
Total	7	64	83	97	70	63	15	1	400

Although a widespread feeling prevails that only elderly people are operated upon in such camps, this was not confirmed by the present study, which showed that only about 19.75% of the cases were over 50. The ban on carrying out vasectomies in men over 50 had not then been imposed by the Ministry of Health. The analysis also indicated that in 30.75% of the cases, enquiries regarding the age of the acceptors at mass camps was superficial.

Age of wife: The ages of the wives of the vasectomised persons as recorded in the camps indicated that 72.5 per cent of the wives were below 39 years of age. However, on the basis of the depth interviews, only 56.5 per cent of the wives were found to be in that age group. It is surprising to find that in 27.25 per cent of the cases the operation was not at all necessary, as the age of the wife was over 44

TABLE 2

Age of wives recorded at camps and after depth interviewing

Recorded age group (in years)	Age group after depth interviewing (in years)								
	25-29	30-34	35-39	40-44	45-49	50-55	61-65	56-60	Total
21-24	13			1					14
25-29	41		4	1		2			48
30-34		86	5	9	10	2	1		113
35-39			77	13	14	11			115
40-44				44	13	13			70
45-50					26	6	3		35
50-55						4	1		5
Total	54	86	86	68	63	38	5		400

The modal age group of the wives after depth interviews and from the records of the mass vasectomy camps was 35-39 years.

Number of children : Table 3 shows that 67.2 per cent of the vasectomy acceptors had upto four children at the time of operation and about 21.5 per cent had three and five children each. In the mass vasectomy camps conducted in Gujarat State, 24.6 per cent of the cases had four living children whereas in the present study, 38 per cent has this number at the time of operation.

TABLE 3

Vasectomy acceptors by number of children

Number of sons	Number of daughters 0	1	2	3	4	5	Total
0	1			1			2
1	4	8	17	9	4		42
2	17	58	86	23	1	1	186
3	11	43	40	16	1	1	112
4	14	16	10	4	2	1	47
5	4	2		1	1		8
6		1				1	2
7							
8	1						1
Total	52	128	153	54	9	4	400

Occupation : The majority (59.5%) of the respondents were self-employed labourers. About 19.5 per cent were engaged in cultivation, 16.2 per cent in service and 7.2 per cent in business. The remaining cases belonged to occupational groups like service and business classes. Surprisingly enough, in this part of the country, a large number of acceptors belonged to the labour class whereas in Gujarat, only 39.4 per cent of the cases were engaged in cultivation and farming and 37.5 per cent worked as agricultural labourers. The total number of labour class persons and cultivators was, however, almost the same at both places (78% to 79%).

Education : An education-wise analysis of the vasectomy acceptors revealed a high degree of illiteracy—as much as 70.5 per cent. Of the remaining, 9.2 per cent were just literate, 7.0 per cent had studied upto matriculation and 1.5 per cent were graduates. In the Gujarat State camps, 64.8 per cent of the vasectomised men were illiterate.

Post-operative complications: Post-operative complications were seen in about 60.75 per cent of the cases operated upon in the mass vasectomy camps. Of the 400 cases studied, 15 per cent suffered from sepsis, 5.7 per cent from haematoma and 13 per cent from a dragging sensation of varying degree. Other complications enumerated by the respondents were fever, pain, and swelling (Table 4). It may also be mentioned here that one case mentioned several complications which occurred simultaneously.

Data regarding the treatment taken by the acceptors for the post-operative complications revealed that 121 cases did not consult any doctor while 15 cases consulted private practitioners and paid for their treatment. Of the 79 cases who contacted government doctors posted at the State Dispensaries, Block Headquarters, and Family Planning Centres, 71 were not supplied medicines from the hospitals and were asked to purchase them from outside. In all twenty-three cases suffered from major complications and were admitted to the hospital. The 30.25 per cent cases, who in spite of complications, could not consult doctors could be either those who suffered from complications of a minor nature, which they thought may disappear in due course, or those who could not get treatment in the hospitals in spite of an attempt made by them.

Further, 28 per cent of the cases consisted of those who consulted private practitioners and spent money for treatment, were admitted to the hospital and purchased medicines from the market, as these were not supplied from the hospitals. Such cases may also affect the motivational programmes and affect the attendance to camps to be held in future.

Distribution of and proper education about the use of Nirodh to the vasectomised cases was considered essential. Data revealed that out of 400 cases, 218 cases received between 6 to 12 pieces of Nirodh following vasectomy. Of these, 113 acceptors did not know its use. Of the remaining 182 cases who were not provided with Nirodh, only 44 knew its use. Thus 251 cases did not know the use of Nirodh and their wives were still susceptible to pregnancy for some time after the operation. The data further revealed that the Nirodh distributed to 28.25% of the acceptors who did not know its use was wasted and 73.75% of the operated cases were left open to the risk of impregnating their wives. The lack of knowledge regarding the use of Nirodh may be due to the utilisation of female workers for the distribution (and explanation of the use) of Nirodh at the mass vasectomy camps.

E 4

Post-operative

	Fever														
	Slight	Mode-rate	High		Mode rate	High	Sligh	Mo rate		Haem-atoma	Dragging sensation	Sepsis	Bleed-ing	No trou-ble	Total cases
Mushari	9	2	2	29	9	6	24	4		3	9	10		30	8'
Bochaa	7			19	7	2	17	2		2	7	9		39	66
Turki	3	2		6	3	2	3	1		2	2	3		13	26
Miscellaneous	1			13				1		5	6	5		6	21
Bariapur	1														15
Kharagpur	3		2	8	1	6	6				1	2	4	20	35
Tarapur	1	3	2	6	13	1	2	7		5	10	16	1	5	45
Sangrampur		1	2	16	3	6	12	4		2	14	13	4	16	70
Maner	4	1		2	2	5	4	2			2	1	1	2	18
Baniapur	5			12	1		11			2	1	1	1	2	17
Tota	45	9	9		39	49	90	2	30	23	52	60		[illegible]	

TABLE 5

Reproductive period covered by vasectomy

Years	Number of cases on the basis of reported age	Number of cases on the basis of age after depth interviewing
Below 5	70	68
6-10	115	86
11-15	113	86
16-20	48	41
21-25	14	13
Total	360	294
Menopause	40	106
Grand total	400	400

Reproductive span of wives covered by the operation: Table 5 shows that on the basis of recorded age, 5-25 years of the reproductive life of the wives of the vasectomy acceptors were covered as a result of the operation in 72.5 per cent of cases; whereas on the basis of the ages obtained through depth interviews, the figure was lowered to only 56.5 per cent. The number of acceptors whose wives had already attained menopause at the time of the operation was 40 on the basis of recorded age and 106 after depth interviewing.

Discussion

The acceptor characteristics of the cases vasectomised at mass camps in Bihar State when compared with those in camps held in Bulandshahar (U P.), Ernakulam (Kerala) and Gujarat State indicated a resemblance in age of both the acceptors and of their wives, the number of living children, occupation and educational attainments of the acceptors.

The ages of the respondents and of their spouses at the time of operation have an important bearing on the reduction of fertility. It was assumed that extra-monetary incentives might attract villagers who were either not capable of producing children or who were of advanced age. In the present study the modal age group of acceptors was 40-44 years and 24.25 per cent (age obtained after depth interviews) and 30.5 per cent of the respondents (age obtained on the basis of records), belonged to this age group: In the Gujarat and Bulandshahar mass vasectomy camps, the modal age group of acceptors was found to be 34-39 years and 45-49 years respectively.

Data further showed that 19.75 per cent of the vasectomised persons were above 50 years of age whereas according to recorded data only 3.75 per cent of the cases were above 50 years. This difference of 16 per cent was much lower than that found in the Bulandshahar study, i.e., 52 per cent.

Data on the age of the wives at the time of operation revealed that on the basis of recorded age, the modal age group was 35-39 years to which 28.95 per cent of the wives belonged. The age-group of the wives following depth interviews showed that 43 per cent of them were 30-39 years. In the Bulandshahar study, the modal age group of wives was 40-44 years The percentage of wives over 44 years of age was lower in our study (26.5%) as compared to the Bulandshahar study (39%). An important point that emerged from the analysis is that, as pointed out earlier, in 25 per cent of the cases, the operation was not at all essential as the wives were over 44.

The study revealed that the desire to adopt some permanent method of family planning was higher after the couple had had three children as was evident from the fact that more than three-fourths of the cases had three to five children. The percentage of cases having over five children at the time of operation was 32.75. In our study, we came across only two cases of this type : in one case, the only child died after the operation and the other had no female issue.

Thus, keeping the limitations of the study in view, the quality of the operations performed in the camp under study, measured in terms of age of wife and number of children, appeared to be lower than that found in Gujarat camps and better than in the Bulandshahar camps.

The acceptance of vasectomy by labourers (59.5%) and cultivators (19.5%) bears testimony to the fact that this method is becoming popular among the rural people and that mass camps have proved to be very effective in motivating those people who were till now said to be averse to the adoption of family planning methods. Another advantage of such high acceptance in these occupational groups is that it will create a body of satisfied users in the villages, who, if followed up properly, will create favourable public opinion for this method and eventually accelerate the rate of adoption.

The extra incentives given to the acceptors who were mostly labour labour and agricultural workers, was perhaps due to the fact that the camps were held outside the agricultural season when there is a shortage of avenues for wage earning. As expected, the labourers and cultivators who accepted the method in overwhelming majority were mostly the illiterate and just-educated masses from the villages. It also showed that scholastic education did not play a very important role in motivating the people to adopt this method. The simple villagers appeared to be aware of the significance of the small family norm. What they needed was just a sort of stimulus to activate their interest, in the shape of the special opportunities provided in the mass vasectomy camps.

The low representation of the educated masses in the sample was due possibly to the long waiting period in the queues at different counters in the camp and lesser privacy as compared to the routine operation in the hospitals.

Fear of post-operative complications sometimes acts as a barrier in the process of motivation. In the present study, the incidence of post-operative complications ranging from slight pain to major complications like sepsis and haematoma were as high as 65.25 per cent. The major complications were pus formation in 15 per cent, haematoma in 5.75 per cent, bleeding in 2 75 per cent and severe pain in 12.25 per cent of the cases In the Bulandshahar camps, 74.5 per cent cases had no complaint after the operation.

Forty-seven of 51 cases with complaints had pain, swelling or fever in the first week following the operation. In the Ernakulam camps the complication rate which was of a minor nature was only 3.2 per cent. This difference in the rate of complications in some of the mass vasectomy camps as well as for operations performed on a routine basis might be due to the close follow-up of the cases within seven to ten days of the operation. During this period, even the slightest complaints were registered and therefore the findings were not unexpected. Studies on the follow-up of vasectomy cases conducted at different places demonstrated a far lower degree of post-operative complications for instance Apte and Gandhi[1] found a complication rate of 20.9 per cent in Bombay, and Sawhney and Lango[2] found that nearly a third of the cases in Jammu and Kashmir suffered from one complication or the other. Srivastava's[3] study in Bihar showed a rate of 25 per cent and Sundaram's[4] in Bombay, a rate of 26.5 per cent.

Providing the necessary facilities for the treatment of post-operative complications by the camp authorities may serve as an extra incentive. In the camps under study, sufficient arrangements for the treatment of complications were made at the Block Headquarters and at the site of the camps. But surprisingly enough a fairly large number of the cases did not consult the doctors and a number of them paid for their medicines when they consulted government doctors or went to private doctors for treatment of their post-operative complications. It might perhaps be that the government doctors were not within easy reach of the cases. Thus, the data indicated that due attention was not paid to the acceptors at the peripheral level, after the operation.

The cases who could not get the necessary treatment in spite of their complaints and those who spent money for the treatment of their complications may influence the decision making of other couples intending to accept the sterilisation operation in mass vasectomy camps.

Enquiries regarding the post-operative supply and use of Nirodh revealed that it was supplied to 54.5% of the operated cases. Also, 62.0% of all operated cases did not know how to use it Thus, the wives of 73.75% of the cases were susceptible to pregnancy after the operation of their husbands (as 28% of these cases though given Nirodh, did not know how to use it and the rest were not given the contraceptive). It is feared that if the wives of some of these cases conveive it might give rise to a serious social problem and affect the programme in the area concerned. The distribution of Nirodh by female staff might be one cause of the poor knowledge and supply to the cases as its use may not have been explained to them due to the shyness of the female staff. It would be advisable to employ male staff only for such purposes, who can freely discuss the use of Nirodh, period of use, semen examination, stitch removal and other precautions, with the acceptors.

The Bulandshahar study also revealed that Nirodh was supplied to only 53.5% cases and very much resembled the findings of our study. The advanced age of the cases by appearance might be another cause for the poor supply and knowledge The percentage of ineligible cases was found to be only 26 5% in our study whereas in the Bulandshahar camp, 50 65% of the cases were ineligible for the sterilisation operation.

According to the calculations of the National Institute of Family Planning, New Delhi, one vasectomy operation prevents approximately 1.6 live births and as per the birth prevention model of the Department of Family Planning, for the Ernakulam camp, one made operation prevents 2.2 live births. If calculated on the basis of the NIFP model, 56,448 live births (35280 x 1 6) have been prevented and if calculated by the model of the Department of Family Planning for the Ernakulam camp this works out to 77,616. This is a rough estimate of the births prevented by the operations performed in the mass vasectomy camps during the year 1971-72 as no specific birth prevention model has been evolved for this region.

Summary and Conclusion

The success of mass vasectomy camps in this State was beyond expection. It has demonstrated that in a developing country like India and in a State like Bihar, economic incentives are the main motivating factor which draws people to adopt the sterilisation operation. Such motivation many appear to have affected the selection of acceptors, measured in terms of the age of the wife and the number of children. The study found that 72.5% of the wives on the basis of the recorded age and 56.5% of the wives on the basis of the age obtained after depth interviews, were less than 39 years of age and 67.25% of the cases had up to four children at the time of operation. The enquiry about the ages of the acceptors and that of their spouses made at the mass vasectomy camps conducted in Bihar appears to be faulty.

Although the rate of complications found in the present study was as high as 65.25%, those of a mildly serious nature like sepsis was 15.0% and haematoma 5.75%. A high rate of complications was found in this study because the data were collected within 8 to 10 days of the date of the operation and even slight pain was recorded as a post-operative complication. When the data were compared it was found that in the routine operation the rate of complication is lower.

The study concluded that the supply and use of Nirodh by the operated cases was not given much importance and not treated as a main part of the post-operative instructions. It was dispensed to only 54.5% of the cases operated and more than half of them did not know its use. Utilisation of services of the female staff for this purpose may be the main cause for such lapses

An organised body of users created in each village will further bridge the gap between knowledge and acceptance by accelerating the decision making process related to the acceptance of family planning methods.

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NEWS & NOTES

THE CHINESE MEDICAL SYSTEM

China is expected to achieve its goal of a one per cent annual population growth rate within 25 years, writes, Dr. John Biddulph, Senior Paediatrician, Port Moresby, who gives an interesting account of his visit to China during April 1973 to take a brief look at the system of health care delivery in both rural and urban areas (Papua New Guinea Med. Jr., Vol. 16, No 2, 1973). There has been a dramatic fall in disease and death rates in China over the past 24 years. The infant mortality rate which was 117/1000 pre-liberation, is now under 30/1000 and in Shanghai city it is an incredible 10/1000. Birth rates of 30/1000 occur in many rural areas with a birth rate of 7/1000 in Shanghai. The amazingly low figures for Shanghai are almost entirely due to the very effective family planning services, whereby high risk pregnancies are virtually eliminated.

This remarkably effective network of health care at grass roots level which depends mainly on the widespread use of adequately trained auxiliaries (receiving excellent support, supervision and continuous in-service training), is based on active community involvement (the local community largely finances and supplies its own health needs) and extends right down to each family in both urban and rural areas.

According to Dr. Biddulph, the main features of the Chinese medical system that have allowed it to be effective appear to be the following:-

1. *Integration of the health system with general economic and social development planning*: The priorities of the national development programme are reflected in the health priorities. China's major resource is its large population, and she pays great attention to the development of her human resources. People are seen primarily as producers, and only secondarily as consumers.

A similar philosophy underlies her attitude to family planning. The policy is that China's population will increase in a planned way. This policy is followed not because China is over-populated, but because social production is carried out in a planned way and this requires population increase to also be planned.

2. *Stress on prevention*: City hospitals are responsible for the health care of a sector of the city which they serve. They provide support, supervision and continuing education for the health workers in the

neighbourhood health centres, factories, schools and kindergartens in their sector of the city. Senior surgeons, for example, regularly visit factories to help screen the factory workers and educate them on accident prevention.

Immunization coverage is almost 100 per cent and this has been achieved by the widespread use of auxiliaries and a net work of health care that extends down to grass roots level.

3. *Emphasis on rural areas*: Eighty per cent of the population live in rural areas, so that improvement of quality of life, including education and medical facilities in rural areas is seen as a priority. It is also seen as a way of obtaining a healthier labour force and hence increased agricultural output as well as a means to avoid the unplanned and massive urban drift that occurs in other developing countries.

Just as every doctor in China is actively involved in disease prevention so also every urban doctor contributes to the rural health service. Every city hospital doctor and every staff member of a medical college spends one year out of every three years working as a part of a health team in a rural area.

4. *Widespread use of medical auxiliaries*: Besides increasing its number of medical schools and output of doctors, China solved the problems of limited professional medical manpower by bringing its traditional health workers (acupuncturists and herbalists), of which there were about 500,000 at the time of liberation, into the state health service, and by training massive numbers of part-time health workers, thereby utilizing its resources of surplus labour.

Their work mainly consists of health propaganda, sanitation, immunization, family planning, first aid and simple treatments. They also act very effectively as epidemiological scouts for their community. These part-time health workers are regarded primarily as peasants or factory workers as the case may be and are very much part of the local community. They are always available to the people whom they serve, amongst whom they live as equals. At present there are over, 1,000,000 barefoot doctors working in rural areas, and they in turn are helped by about 3,000,000 assistants.

In addition to these part-time health workers, each one of whom is responsible for the health care of 100–1,000 people, each family supplies a health worker who knows some basic first aid, is responsible for the sanitation of his household and keeps the part-time health workers fully informed on the health status of his family.

5. *Training programmes are job-oriented*: Medical auxiliaries, such as the barefoot doctors are trained specifically for the tasks they will

be expected to do. Their training is basically practical and takes place in their work environment.

Medical students' education programmes have recently been radically changed. The course has been shortened from six years to three to four years, and stress has been put on the practical aspects as well as theory. Emphasis in training programmes is placed on acquiring specific skills rather than credentials There are no grades or competition between students.

6. *Integration of traditional and Western medical practice*: Not only did this help solve the problem of manpower shortage, but it also helped bring Western medicine in an acceptable way to the traditional minded rural community. It has also been a factor in helping keep down health costs as Chinese herbs can be grown locally and are much cheaper than pharmaceuticals.

Acupuncture is also remarkably effective for relief of many chronic diseases, and is now being used extensively for anaesthesia with considerable saving of costs. In addition, Chinese traditional medicine is able to achieve results in certain areas where Western medicine at present is ineffective.

7. *Privileged status of doctors discouraged*: The principle around which all work, and particularly health work, in China is organised is "Serve the People". There is a relationship of equality between students and teachers, and each is free to constructively criticise the other.

8. *Self-reliance*: China has built up its own unique system that is well adapted to its socio-economic system, takes account of its cultural heritage and is relevant to the needs of its society.

9. *Active involvement of the community*: China has perfected the technique of mobilisation of the masses to support preventive activities and mass health campaigns. Active community participation leads readily into the concept of community health and local responsibility for health.

10. *Decentralisation of health services*: This allows greater flexibility and enables programmes to take account of local conditions. It also allows local communities to assume greater responsibility.

Co-operative medical schemes have been built up at the local level. Thus in most communes each individual pays approximately 50 cents a year to the commune for health care. Any specialised medical care needed which cannot be provided by the commune health system will be paid for by the commune. The individual still pays a very small fee (about two cents) for each attendance at a hospital or health centre, and if hospitalized, pays for food.

Apart from immunizing agents and support, supervision and training of medical auxiliaries that are provided free by the state, the local health services are self-supporting. The communes subsidize the 50 cents annual health fee, on an average, with a further 50 cents per person per year.

NEW IUDs

Two experimental models of intrauterine devices are currently being tested in the United States, Canada and Mexico One of these, the progesterone—T, is a T-shaped polymer device containing a six-month supply of progesterone released at an average daily rate of 128 6 mcg. into the uterus. The progesterone released by the device, causes *premature* transformation of the uterine lining into the decidua characteristic of early pregnancy, thus preventing implantation of the embryo.

In a preliminary study on 249 volunteers, Dr. A. Scommegna of the Michael Reese Hospital and Medical Centre of Chicago, did not find any pregnancies in 1,662 woman-months of use "while a device releasing adequate amounts of progesterone was present in the uterine cavity. The device however had a high expulsion rate of 7.9 per 100 women years as well as high removal rates both for medical (6.4) and personal (12.9) reasons. The former were attributed to the clinical procedure and the latter due to pelvic inflammatory disease (over half the woman had gonorrhoea). Another version of this device which releases 50 mg. progesterone daily is being tested in 14 clinics in the U.S., Mexico and Canada. Dr. W. P. Dmowski, also of the Michael Reese Hospital and Medical Centre reports an overall expulsion rate of 2.3 per cent and a removal rate for all reasons of 8 1 per cent of 1,050 insertions of this device, 286 of which were in multiparous women. The one pregnancy with the device in situ for 1,181 (parous) and 460 (multiparous) woman-months, occurred in a multiparous woman whose "uterine cavity was large and presumably progesterone delivery was not adequate".

Dr. J. M. Futoran of San Francisco has carried out preliminary work with a non-rigid saline filled IUD. The device, shaped like an isosceles triangle is first inserted and saline upto a maximum of 0.6 ml (less if the woman complains) is injected into a thin silastic tube running out from the point of the triangle, until the device fills the cavity. Then, the tube is tied up.

From *F P Digest*, Vol. 2, No 5, September 1973

Early results in 207 insertions for 661 woman—months (including 114 multiparous women for 390 woman-months) have been encouraging. There have been no pregnancies with the device in place. There were five removals for medical reasons, one for personal reasons and five expulsions.

FREEZING SPERM DECREASES CONCEPTION

A series of 107 attempts made by Dr. E. Steinberger and Dr. K. D. Smith (*JAMA,* 223: 774, 1973) an artificial insemination (48 fresh and 59 frozen semen samples) of 74 women whose husbands manifested severe oligospermia or azoospermia showed that even short-term freezing had a slight deleterious effect. With fresh semen (used within 1-2½ hours after ejaculation) there were 35 pregnancies or a 73 per cent conception rate, while 36 pregnancies or a conception rate of 61 per cent was observed with frozen semen stored in liquid nitrogen upto five months, although only 12 specimens were stored for over six months.

On the average, frozen sperm had to be inseminated for 5.3 cycles before conception occurred compared with only 4.4 cycles for fresh sperm. An overwhelming majority of the 36 women who failed to conceive had ovarian or tubal disease or both. There were 11 miscarriages (4 with fresh semen and 7 with frozen semen) and 59 live births in the series. Of the latter, 36 or 61 per cent were boys. Only one fetal abnormality was found in a female in the series, conceived after insemination with semen stored for two months.

While insemination with frozen semen "compared favourably" with fresh semen, it appears that pregnancy may occur faster when fresh semen is employed. The frozen sperm used in these attempts at artificial insemination lost an average of 44 per cent of its motility Moreover, after three years, additional and as yet unexplained deterioration sets in, further reducing the number of live sperm in the semen. Experiments with a number of samples of varying sperm counts and motility show that a specimen with a range of 40-200 million sperm/ml along with high motility is necessary for long-term storage, though even in such samples, less than 25 per cent of sperm retain their motility after three years. Also, since the number of pregnancies in this series, resulting from the use of semen stored for over six months is exceedingly small, the researchers conclude that considerable refinement of the techniques and additional experimental evidence is necessary before the true medical and biological significance of human sperm banking can be placed in the proper perspective.

THE FAMILY PLANNING ASSOCIATION OF INDIA

(Registered Under the Societies' Registration Act, 1860)

AIMS & OBJECTS

1. To disseminate knowledge and education about, and to promote the adoption of, the practice of family planning for the advancement of basic human rights, family and community welfare, the achievement of a balance between the population and its resources and productivity, and the attainment of a higher standard and quality of life.
2. To assist wherever possible in the national programme of family planning by undertaking to carry out various activities of a complementary, supplementary or innovative nature.
3. To study and formulate policies and programmes regarding the provision of measures for family planning, population control and allied subjects, and place its considered views and advice before Government and other agencies whenever appropriate.
4. To undertake or promote studies and activities in regard to services, training, education and research programmes covering the demographic, sociological, economic, medical and other relevant aspects of human fertility and its regulation, including methods of contraception, sterility, and sub-fertility, sex and family life education, marriage counselling, population education and human ecology.
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FERTILITY AND FERTILITY DIFFERENTIALS IN A RURAL AREA

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Introduction

The Rural Family Planning Project is a project of the Family Planning Association of India at the Allahabad Agricultural Institute The Project commenced its operation in the year 1971 and covers a typical rural population of 1,60,043 spread over 499 villages of varying size.

One of the first activities of the Project was to determine the baseline data which could be used for programme planning, monitoring of the programme as well as for the final evaluation. This survey was aimed at securing information on the demographic, fertility, mortality and family planning aspects of the project. In this paper, an attempt has been made to present current fertility behaviour and differentials which existed before the programme was initiated.

Methodology

For collecting demographic data, the sampling unit was the household. Data on fertility behaviour was collected from all couples in the reproductive age-group (currently married women between 14-49 years of age), in the sampled households. A systematic sample of 2,937 households (every 10th) was taken from the complete list of households and all women (3,087) in the selected households were contacted for obtaining data on fertility, mortality and contraception. Interviewing was done by eight male and eight female investigators with adequate training in interviewing techniques The reference period for the baseline was taken to be from Diwali (October) 1970 to Diwali 1971 so as to help the informants to recall and report the vital event correctly and accurately.

All schedules were thoroughly scrutinised on cent per cent basis and in case of any discrepancy they were referred back to the field for verification by the supervisor. The data was then extracted from the schedules and transferred to the code sheets and sent to the computer centre, Delhi University, for mechanical tabulation.

Results

Fertility is influenced by various variables and the important ones that have been controlled here in this study are: age of the woman, education of husband, caste/religion, parity of the woman, occupation of the husband, etc. The marital fertility rate has been used as an indicator for assessing the level of fertility and for studying the differentials in relation to various control variables. To provide an overall idea of fertility and mortality conditions in the RFPP field area, the crude birth rate (CBR), crude death rate (CDR) and infant mortality rate (IMR) have also been computed.

Crude Birth Rate, Crude Death Rate and Infant Mortality Rate

The level of fertility in the RFPP field area seems to be exceptionally high as is indicated by the CBR of 58.4 per thousand population accompanied by quite a high mortality with a CDR of 20.3 and IMR of the order of 182.6 (of Table 1).

TABLE 1

Mid-year population	.. 16,313	
Number of live births	.. 953	
Number of deaths	.. 331	
Number of infant deaths	.. 174	
Crude Birth Rate	.. 58.4	per thousand population
Crude Death Rate	.. 23.3	per thousand population
Infant Mortality Rate	.. 182.6	per thousand live births

Age of women and fertility

Table 2 reveals that the marital fertility rate (MFR) is very high in women aged 20 to 29 years. Similar results were seen in another study of PRAI. In this age-group, two out of every five women had delivered a baby during the year under reference. After 30 years of age, their fertility declined with the age of the women. It is significant to note that a MFR of 78.9 was observed even amongst the married young women of age less than 15 years and a MFR of 40.6 amongst women in the age group 45-49 years. The fertility curve in the RFPP field area is of the "broad peak" type.[1]

TABLE 2

Age specific marital fertility rates

Age group	Marital fertility rate
< 15 years	78.9
15-19 "	233.3
20-24 "	396.6
25-29 "	393.6
30-34 "	342.5
35-39 "	277.2
40-44 "	254.7
45-49 "	40.6
All Women	308.7

Caste groups/major castes of the area in relation to fertility

Caste still plays a definite role in almost all spheres of life especially in the rural areas and human reproduction is no exception to it. It is evident from Table 3 that Muslims had higher fertility than each of the three social caste groups of Hindus. Amongst Hindus, fertility seemed to be correlated negatively with social caste status. It was highest in low caste Hindus and lowest in high caste Hindus. In another study of fertility in rural areas by the J.K. Institute of Sociology and Human Relations, Lucknow University, it was seen that Muslims were more fertile than other segments of the population.[2] A detailed comparison is more difficult because of the diversity of caste groups.

TABLE 3

Caste group specific marital fertility rate

Caste group		No of married women	No. of live births	Marital fertility rate
Hindus	High	611	157	256.9
	Medium	1190	374	314.3
	Low	1057	342	323 6
Muslims	—	229	80	349.3
All women		3087	953	308.7

When the major castes of the study area were considered individually, it was found that caste differentials in fertility are quite large. The marital fertility rates in major castes varied from 257.7 in Brahmins to 359.0 in Ahirs. The caste/religions with very high fertility performance are: Ahirs (359.0), Muslims (349.3), Pasis (335.4), Chamars (331.3) and Mallahs (302.1)

TABLE 4

Fertility in some major castes of the rural family planning field area

Major castes	No of married women	No. of live births	Marital fertility rate
Ahir	234	84	359 0
Brahmin	388	100	257.7
Chamar	326	108	331.3
Kurmi	524	156	297.7
Mallah	192	58	302.1
Pasi	316	106	335.4
Muslims	229	80	349.3

Literacy and fertility

An attempt was made to see if the education of the husband has anything to do with the fertility performance of the couple. An examination of the data provided in Table 5 revealed that fertility has a negative correlation with education. The MFR was found to be maximum (328.9) amongst illiterates followed by the just literates (319) and least (232.1) amongst those educated upto the college level

TABLE 5

Fertility in relation to the education of the husband

Level of literacy	No of married women	No of live births	Marital fertility rate
Illiterate	1736	571	328.9
Literate	357	114	319.3
Primary & Middle	627	172	274.3
High School & above	367	96	261.6
All women	3087	863	308.7

Occupation of husband and fertility

Occupational fertility differentials are provided in Table 6. Students, although youngest of all the other groups, had the lowest fertility probably due to their being preoccupied in their studies. The service class* had a lower fertility performance as compared to other occupational groups except students. Labourers, whether engaged in *bidi* making or in agriculture or as artisans, had very high fertility. The category of "Others" (persons following other occupations than those specified in the table) had the highest fertility with a marital fertility rate of 372.3 per thousand married women.

TABLE 6

Occupation of husband and fertility

Occupation		No of married women		No of live births		Marital fertility rate	
Farming		1468		448		305.2	
Service		524		148		282.4	
Bidi Making	Labourers	168	636	55	230	327.4	335.3
Artisan		36		13		361.1	
Labourers		482		162		336.1	
Petty Traders		148		44		297.3	
Students		104		25		240.4	
Unemployed		20		7		350.0	
Others		137		51		372.3	
All Women		3087		953		308.7	

Parity and fertility

Parity specific marital fertility rates were also computed to see if fertility declined with parity of the women or not. It may be seen that consistently high fertility levels were shown by the women till they attained parity eight, and thereafter, a significant reduction in fertility was indicated. The persistent high fertility amongst women of parity 4 to 7 might be due to the fact that child loss is very heavy in the field area of RFPP as is indicated by the very high infant mortality rate.

Conclusion

The baseline fertility for the area covered by the Rural Family Planning Project showed a CBR of 58.4 per 1000 population and MFR of 308.7 per thousand married women in the reproductive age group. This fertility is unusually high, but not surprising. A study conducted in Lucknow Cantonment of the families of army personnel upto the

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* "Service class" refers to those employed on a monthly salary basis and does not include daily wage labourers.

TABLE 7

Parity specific marital fertility rate

Parity	No of married women	No of live births	Marital fertility rate
0	624	158	253.2
1	348	149	428 2
2	314	103	328.0
3	314	103	328.0
4	282	119	422.0
5	271	89	328.4
6	251	79	314.7
7	198	64	323.2
8	193	37	191.7
9	126	27	214.3
10	161	25	155.3
Unknown	5	—	—
All women	3087	953	308.7

rank of Junior Commissioned Officers showed a CRB of 67.5 per 1000 population.[3] Another study conducted by the PRAI in rural Lucknow district in 1967-68 showed a CBR of 45.6 per 1000 population.[4] While the CBR in rural Uttar Pradesh is 46.3 per 1000 population for the year 1971, studies of small areas confirm that there are, even within rural Uttar Pradesh, areas with higher fertility than the rural average.

Fertility was highest in women between 20 to 29 years of age. After 30, fertility decreased with the age of the women. Considering religion and caste variables, Muslims had higher fertility levels than all Hindus. However, a further breakdown revealed that Ahirs had the highest fertility followed by Muslims, Pasis, Chamars and Mallahs in that order.

Among all the occupational groups, labourers, irrespective of the type of labour they were engaged in, had the highest fertility.

Fertility was negatively correlated with the educational status of the male spouse. The husband's education was used since 93% of the currently married women are illiterate.

The fertility was consistently very high upto para eight. This fact may be due to very high infant and child mortality.

The purpose of gathering baseline data of fertility and analysing its differentials serves two purposes: Firstly, it is necessary to have this data for judgemental evaluation of programme inputs over time.

If births averted by the programme are to be measured one must be aware of fertility differentials at the start by more variables than age and parity. This would be particularly useful if the Monte Carlo technique is to be used.[5] Secondly, analyses of fertility differentials over a sample provide guidelines for a closer examination of fertility behaviour. For example, if we know why a particular sub-set of the population has a higher or lower than average fertility, we can look at this sub-set more closely for psychological and other variables.

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THE INDIAN FAMILY PLANNING PROGRAMME—AN ASSESSMENT OF PAST PERFORMANCE*

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In 1965, a major structural reorganisation was effected in the Indian family planning programme which started in 1952, after which the performance shot up. A comparison of plan outlay against expenditure on family planning shows that financial provisions were never a restraining factor, and that utilisation has been below outlay, glaringly so in the first two plans, when even the moderate provisions were grossly under-utilised. This suggests the failure of the flesh.

The programme's progress may be assessed from a number of angles. One may be the setting up of the needed inputs. In quantitative terms, it should be granted that an elaborate organisational infrastructure right from the village and town levels to the Central Government level has been put up. The position may be different, if considered qualitatively. There is particularly no scientific assessment from this angle. By considering the number of births prevented per 1000 population—an index of doubtful significance, and family planning expenditure per 1000 population, Misra[1] concludes that "The cost-effectiveness of the programme varies in States, e.g., Andhra Pradesh, Orissa, Maharashtra and Tamil Nadu get better results from their expenses than Haryana, Punjab or Kerala". A number of factors besides the qualitative aspects of the programme enter into this matter. Knowledgeable circles hold that the quality of medical attention given to the vast masses, particularly in the matter of follow-up services, leaves much to be desired. This deficiency is a great stumbling block for quick programme progress. Another major shortcoming is the absence of systematic guidance and supervision of the family planning social workers at the grassroots level. There has been no study of the part motivational skills play in their functioning. In their study of the Bihar vasectomy camps, Jain and Sharma[2] found that in answer to a question on the technical training of motivators, the example of the neighbour and of receiving economic incentives roused the interest of some of them. One is inclined to believe that much of the promotional work at the social worker level is in the hands of such persons.

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* Extracted from a paper presented to the Seminar on "India's Population Future", organised by the International Institute for Population Studies, Bombay, 8-11 October, 1974.

Family planning involves a radical change in the traditional Indian way of life and the fostering of a new outlook on reproduction. Another angle of assessment of the programme would, therefore, be the permeation of the idea among the public. It can at once be said that family planning has come to be "legitimised" in a society, where everything suggestive of sex is taboo. There is hardly any organised opposition to the programme. KAP surveys show a high percentage of approval of the idea of birth control. But there is a glaring ambivalence between favourable attitude and practice. It may be that the measurement of attitude is defective, there being no effective effort to probe into the genuineness of the response.

The most recent KAP survey conducted by the Operation Research Group in 1970 shows that 78% of the couples were aware of at least one method of family planning, but only 40% of them had knowledge of its use, the condom having been left out of account. There is a sharp gap between awareness and knowledge of the use of the different methods. The survey shows that 13.6% were currently using a method and 4.6% had used one only in the past, making a total of 18.2% of ever-users. In the urban areas, ever-users amounted to 35.6% and in the rural areas, 14.3%.

The acceptance rate of family planning methods can be another criterion of assessment. The rate may be based on the number of acceptors during a recent year or number of years or since inception, expressed per 1000 population, or better still, per 1000 couples in the reproductive ages. A refinement may be that instead of clubbing the acceptors of different methods, each may be weighted according to the number of births saved per user. The Department of Family Planning has adopted conversion factors of 1/3 and 1/12 for the IUD and conventional contraceptives respectively, to get the figures for equivalent sterilisations. Another measure that has the advantage of being more appropriate for reflecting the impact of the programme, is the percentage of couples protected. It carries over the protection given by sterilisation and the IUD in subsequent years and restricts the protection of the condom to the year of use. A refinement is to introduce the factor of use-effectiveness. The Department takes the use-effectiveness of sterilisation to be 0.99, of the IUD, 0.87, and of the condom, 0.50. These various measures are highly correlated.

The mainstay of the Indian programme is sterilisation—other methods do not count for much. According to official reports, upto the end of March 1974, the cumulative acceptance rate per 1000 population (March 1974) was 25.5 for sterilisations, and 8.6 for IUDs, making a total of 34.1. In terms of percent couples (in reproductive ages) currently protected, the figure was 11.5 for sterilisations, 1.3 for IUDs and 2.8 for conventionals. This adds up to 15.6 which gives the percentage of couples effectively protected.

In terms of a reduction in the birth rate, this level of effective protection roughly means a lowering of the birth rate by 13.9% as a result of family planning work done up to the end of March 1974. An estimate of the birth rate in 1971, without any effect of family planning work, obtained by applying the marital age specific fertility rate works out to (40.2 × 0.139) = 5.6 points, meaning that the birth rate for the year ending March 1974 would be around 34.4.

Another estimate is given by the number of births averted, however contentious this index may be. The Family Welfare Planning Year Book 1972-73, issued by the Government of India, states that 2.9639 million births were averted in 1972-73 as a result of the programme. This means a reduction of about 5 points in the birth rate.

On considering the evidence presented by the recorded rates under the Sample Registration Scheme, it is held that the birth rate in the year ending March 1974 was a little above 35 It may be around 37. After all, the correctness of the computed rate of 34.4 depends on the correctness of the parameter values and assumptions behind the calculations. In particular, the age distribution of the wives of contracepting couples is a crucial factor and the correctness of the assumed distribution cannot be vouch-safed in the absence of any concrete data.

The pace of the sterilisation programme shows a disheartening steep fall, which is mostly real. It is only after reorganisation was completed that the programme was accelerated but it was mainly due to the shot in the arm given by the fortnightly camps, mainly vasectomy. In their anxiety to show spectacular results, the programme administrators fell to this device, which was greatly boosted under the specific name of "mass vasectomy camps" in 1971-72 and again in 1972-73. Here, a much higher compensation money of Rs. 100 per sterilisation was paid. The Department draws a distinction between these camps and the usual fortnightly camps giving an erroneous impression, at least to some, that mass camps were a feature of 1971-72 and 1972-73 only.

Even if the avowedly incomplete figures for vasectomy given in the Year Book are ignored, 1971-72 is left with 1.43 million sterilisations and 1972-73 with 1.03 million. These figures should prepare one to face the low figures of 0.9 million sterilisations in 1973-74, when no mass vasectomy camps were held.

After trying the camp approach for over five years, light dawned on the programme administrators about the "counter productive" effects of mass camps, the major one being that in organising such camps every nerve is strained to shoot high, which completely paralyses normal motivational activities. In this respect, there is some parallel to the "Helper's Scheme" introduced by Maharashtra. The conclusion of an evaluation team was that systematic and sustained follow-up of acceptors and intensive motivational efforts of individual couples through house-to-house visits does require full-time regular and paid staff. The camps affect the programme similarly by securing a one-time gain at the cost of the long-term objective of building up the future.

The year 1973-74 suffered from another serious administrative muddle, which was quite candidly stated in the Parliament. Orders had been issued for disbanding a section of staff and stopping further capital and developmental expenditure. It was much later in the year that the cuts were restored but the jolt seems to have cut the vein. During the first two months of 1974-75, figures for which are available, only 89,906 sterilisations, 38,151 IUD insertions and 1,627,198 conventional contraceptive users were recorded as against the corresponding figures of 102,562 sterilisations, 35,839 IUD insertions and 2,259,954 conventional contraceptive users in April and May 1973. It does not seem that the setback is temporary unless there is a breakthrough in some way. At this juncture, it seems also necessary to look a little seriously at the strategy of heavy reliance on sterilisations.

On the basis of field surveys, the average age of the wife at the time of the sterilisation is estimated to be 33.7 years, with an average of 4.3 living children (children born alive will be more). These figures have to come down very considerably to make the desired impact on fertility. On the average, an Indian woman is 26 years of age by the time she gets 3 children. It is too early an age for the adoption of a permanent and practically irreversible method like sterilisation. Medical opinion is reluctant to advocate sterilisation before the wife has reached maturity, which is by age 30 years, when most of her children will have been born. There is a clear need to stress less drastic reversible methods, which can be used for the first five to ten years of married life for spacing and cutting down a few births. Sterilisation may follow later. It seems that the present contraceptive technology is ill-suited to a situation of low motivation. A break-through, which is in the offing, is eagerly awaited.

The IUD made a promising start in the first two years but thereafter its acceptance declined markedly due to the well-known scare caused by backache and bleeding. The run of figures between 1968-69 to 1971-72 seems to suggest that its acceptance will settle down to half its initial level, but the performance in the next two years 1972-73' and 1973-74 seems to belie even this modest expectation. As things go, at present, there is little hope that this simple and effective method, which can protect a fair section for a number of years, will ever find an honourable place in the armoury of the Indian programme. Only Punjab and Haryana showed some acceptance of the method. Andhra Pradesh and Orissa are distant cousins but other States have shown little interest. There is no scientific study of the relatively better affection of Punjab and Haryana to this discarded child. This method has been found to work elsewhere and it is puzzling to find a total absence of any effort to rehabilitate it. There have been empty talks of launching a research project to study in depth the phenomenon of bleeding, backache and other inconveniences caused in some women who use the IUD and not in others, with a view to evolving a rehabilitation scheme.

Among the conventional contraceptives, the condom steals practically the whole show. For instance, against 211,750 thousand condoms distributed free and by commercial sales in 1973-74, only 8.6 thousand diaphragms, 273 thousand jelly/cream tubes and 957 thousand foam tablets were distributed.

The distribution of condoms shows a fairly steady rise since 1963-64. As from 1968-69, the much advertised scheme of sales of condoms through established commercial channels is also being worked. Commercial sales are rapidly rising and add so much grist to the mill. During 1973-74, 211,750 thousand condoms were distributed, of which 95,520 were supplied free. While the trend is encouraging, one would like to see much higher figures in a country of India's size. The present level is only a flea-bite. However, the real snag lies in the impact on fertility in our society of low motivation. As regards free distribution, field workers have to render an account of their work in terms of couples contacted and condoms distributed. The conjecture that the workers just dump them on potential users to keep their figures up cannot be considered to be wholly uncharitable. We read not infrequently that postmen simply dump the dak in the gutter instead of going through the laborious task of distributing it. Stories go round of children using condoms as baloons.

Commercial sales are on a firmer footing, as the recepient has to pay, though at a highly subsidised rate. While it may be conceded that the buyers are genuine users, the factor of low motivation is there to impair regularity and continuity of use, which is essential for birth prevention. In the West, the condom did succeed as a method of contraception, but the factor of high motivation makes all the difference. The few small studies of condom receivers from clinics in

Bombay and Ahmedabad, which covered motivated users, do not present any bright picture.

The programme, has, after years of vacillation, only recently included orals, though they have a world-wide clientele. The National Family Planning Institute analysed the experience of 1,512 acceptors and found that 40% dropped out after 6 months, 61% after 12 months and 73% after 18 months. This experience is comparable with that in Taiwan, where a high drop-out rate was registered due to side effects like nausea, vomitting, dizziness, bleeding and planned and unplanned pregnancies.

Legalised abortion is as yet a recent entrant, but there is no evidence of a bottled-up demand. The Medical Termination of Pregnancy Act is effective as of 1st April, 1972. It seems that it is idle to expect, on the parallel of Japan and East European countries, that legalised abortion will in the near future significantly reduce the number of births in India. It should be conceded that in the Indian setting, abortion seeking requires a much higher motivation to limit family size than contraception.

Another direction, in which the progress of the programme may be looked at from, is its areal impact on fertility. "Programme Information", issued by the Department of Family Planning, mentions 12 localities showing reductions in birth rates due to family planning work. The Gandhigram Project of Rural Health and Family Planning recorded a decline in the birth rate from 40 in 1962 to 36.3 in 1965. The Singur rural area, which at one time had a family planning demonstration project, showed a decline from 39.3 in 1962 to 34.2 in 1966, but it is understood that with the close of the project, the birth rate has again reverted to its old level. Ogale and Ranganathan[4] surveyed 10% households in the primary health centre and sub-centre areas in Sirur Taluk of Poona district in 1967, and found a reduction of 18.5% in the fertility rate of women aged 18-47 years. They took all the declines as due to family planning work in the areas. In the area surveyed, 6% of married women in the childbearing ages were sterilised and another 2.3% were using other methods.

Gilroy[5] claims that the birth rate fell to 22.7 in 1968 in the Assam tea plantations, where 13 per 1,000 population had been sterilised. A no-birth bonus scheme had been in operation in the area since May 1971. As a result of the good welfare work in three estates, the birth rate fell from 36 in 1968 to 24 in 1971, and the infant mortality rate from 63 in 1968 to 13 in 1971. This is an outstanding example of a successful family planning project, no matter at what cost.

Among the special schemes of the Government, the All-India Hospital Post-partum Programme deserves special mention. Upto

March 1973, it covered 124 institutions. In 1971-72, 51% of the total obstetric and abortion cases handled, accepted family planning methods and this figure rose to 55% in 1972-73. Among them, 19% covers women (or their husbands) who accepted a family planning method after delivery/abortion, and 26%, those who accepted family planning but were not obstetrical/abortion cases in the preceding three months. The distribution of acceptors since inception by method used is 29.4% tubectomies, 9.5% vasectomies, 8.0% IUDs, 3.7% orals, and 49.4% conventional contraceptive users It is satisfactory insofar as it goes, but what do 2.60 lakh family planners contributed by the programme in 1972-73 count in their country of 210 lakh annual births ?

The Year Book gives details of the working of what is known as the "Intensive District Scheme" (1st phase). The seventeen intensive districts selected for the Scheme account for 9% of the population of the States involved. In 1973-74, the sterilisation rate was 6.9 per 1,000 population, that of IUDs, 0.7, and of conventional contraceptives, 1.8, making a total of 9.4 acceptors per 1,000 population In terms of equivalent sterilisations, the acceptance rate was 7.3 per 1,000 population. Seen against the corresponding rates for all India for the same year, where the respective figures were 5.4, 0 6 and 2.3 (only for free supplies), there is hardly anything to commend about the achievement of the Scheme. Even Andhra Pradesh's figures for the same year were 7.5, 0.32 and 1.1 respectively. Maharashtra did much better still.

Under the "Selected Area Scheme" in 5 districts of Varanasi in Uttar Pradesh, in 1972-73, the sterilisation rate per 1,000 population was 5.0, IUD 0.9, and conventional contraceptive users 1.5, making a total of 7.4 acceptors per 1,000 population. In terms of equivalent sterilisations, the acceptance rate was 5.4. These figures are equally poor.

The Indian programme is centrally financed, but the execution is in the hands of the States, and within the framework of the all-India policy. There is great scope for local ingenuity, which has been exercised in some cases. A proper insight into the programme development can be gained only through a proper analysis of State performance, which is shown in Table 1. In the table, the States are grouped by quartile of the percentage of couples protected by all methods till the end of March 1974 since the inception of the programme. Column 6 gives the percentage of the State's population to that of India's and Column 7 shows the percentage of couples in reproductive ages in each State to the all-India total. The figures in Columns 6 and 7 differ trivially. The difference is noticeable in the cases of Kerala, Madhya Pradesh, West Bengal, Uttar Pradesh and Bihar, and hence it is more appropriate to use the number of couples in the reproductive ages for calculating the percentages.

The most striking feature of Table 1 is that the two most populous States, viz., Uttar Pradesh and Bihar are lowest in performance. Maharashtra, the next in order of population, has done the best. The next group of States, which have, comparatively speaking, done moderately well, included Tamil Nadu and Andhra Pradesh, which have sizable populations. Others like Punjab, Haryana and Kerala are very small. States in Groups III and IV, which have done poorly, have large populations. Punjab and Haryana, which are the only States which have done something in IUD acceptance, have also done the best in conventional contraceptive services. The nature of this deviant behaviour has not been studied. Even Maharashtra, which is at the top, has not shown much liking for the IUD and conventionals. Is it due to historical developments ? Considering the failure of the IUD elsewhere, it is clearly of much interest to find out what it is that makes the IUD and conventionals more acceptable in these States alone.

Columns 8 to 16 present the demographic situation of the States. Upto 1921, the States had a chequered population growth—sometimes it was small and even negative. An abrupt shooting up of mortality largely determined such declines in growth rates. After 1921, growth become steadier and showed an increasing trend again due to the control of abnormal mortality from epidemics, pestilences and famines. The growth rate during the last two decades has gone up sharply. India's population increased by 21.6% in 1951-60 and 24.8% in 1961-70. All the States, with the exception of Punjab, Haryana, West Bengal and Assam, had growth rates in 1961-70, which are well above those in 1951-60. The State growth rates varied within a narrower range. This suggests that developments like better food supply, more effective control of epidemics and other fell diseases and improved medical and health services, which had succeeded in reducing and hence accelerating population growth in some States in 1951-60, were, in 1961-70, catching on in the other States as well. States recording growth rates in excess of 25% in 1961-70 formed 49.7% of the Indian population. The other half, with growth rates of 20-25%, includes the two most populous States of Uttar Pradesh and Bihar. If these two slumbering partners also come up, India may experience an even higher growth rate than it has done so far, unless accelerated acceptance of family planning comes to the rescue.

It seems that 1951-60 actively started the process of accelerated growth rates, which are likely to continue after 1971, unless arrested.

TABLE 1

Family planning performance of States

State	Percentage effectively protected per 100 couples				Proportion of		
	Sterilisation	IUD	Conventional contraceptives	All methods	All India population	All India couples in reproductive ages (15-44)	population 1971
1	2	3	4	5	6	7	8
I. (*4th Quartile* 19.0 *to* 22.9)							
1. Maharashtra	21.6	0.5	0.8	22.9	9.2	9.4	31.2
II. 3*rd Quartile* 15.1 *to* 19.5)							
2. Kerala	16.8	2.1	0.3	19.2	3.9	3.2	16.2
3. Punjab	11.4	4.5	2.8	18.8*	2.5	2.2	23.7
4. Tamil Nadu	16.2	1.0	0.5	17.7	7.5	7.4	30.3
5. Haryana	11.0	4.0	2.2	17.3*	1.8	1.6	17.7
6. Andhra Pradesh	16.1	0.7	0.4	17.2*	7.9	8.2	19.3
7. Gujarat	15.5	0.8	0.8	17.1	4.9	4.8	28.1
8. Orissa	13.2	2.3	0.3	15.9*	4.0	4.2	8.4
III. 2*nd Quartile* 10.8 *to* 15.1)							
9. Madhya Pradesh	10.8	1.2	0.3	12.2*	7.7	8.2	16.3
10. Karnataka	10.1	0.9	0.4	11.4	5.3	5.1	24.3
IV. (1*st Quartile* 6.3 *to* 10.7)							
11. West Bengal	9.8	0.6	0.3	10.7	8.1	7.5	24.8
12. Himachal Pradesh	6.7	1.4	0.3	8.4	0.6	0.7	7.0
13. Assam	5.8	1.0	0.1	7.9	2.7	2.4	8.9
14. Jammu & Kashmir	5.9	1.4	0.1	7.5*	0.8	0.9	18.6
15. Uttar Pradesh	5.6	1.2	0.3	7.2*	16.2	16.7	14.0
16. Bihar	5.8	0.7	0.2	6.6*	10.2	10.9	10.0
17. Rajasthan	5.2	0.9	0.2	6.3	4.7	4.9	17.6

* Out by ± 1.0 from the total of the figures for sterilisation, IUD and conventional contraceptives due to rounding off.

	Decadal growth rate		1951-60		1970-72 (S.R.S) Average				B R	
			Birth Rate (B.R.)	Death Rate (D R)	Rural		Urban			
	1951-60	1961-70			B R	D R.	B R	D R		
	9	10	11	12	13	14	15	16	13 + 15	1970-1972
1.	23.6	27.5	41.2	19.8	33.1	13 '	29.6	9.5	62.7	31.4
II										
2.	22.9	26.3	38.9	16.1	31.6	9.2	29.7	8.3	61.3	30.7
3	21.6	21.7	44.7†	18.9†	33.5	12.0	30.7	9.1	64.2	32.1
4.	11.9	22.3	34.9	22.5	33.5	17.5	25.8	9.2	59.3	29.7
5.	33.8	32.2	—	—	41.5	10.9	30.9	7.5	72.4	36.2
6.	15.7	20.9	39.7	25.2	35.7	16.5	33.9	10.7	69.6	34.8
7	26.9	29.4	45.7	23.5	42.2	17.6	35.5	12.6	77.7	38.9
8.	19.8	25.1	40.4	22.9	35.9	17.7	33.0	11.2	68.9	34.5
III										
9.	24.2	28.7	43.2	23.2	40.4	18.0	33.5	10.6	73.9	37.0
10.	21.6	24.2	41.6	22.2	34.1	14.2	27.0	8.7	61.1	30.6
IV										
11.	32.8	26.9	42.9	20.5	29.9	12.0	27.7	8.7	57.6	28.8
12.	17.9	23.0			35.2	16.3	32.2	7.0	67.4	33.7
13.	35.1	34.1	49.3	26.9	38.7	18.0	30.2	9.9	68.9	34.5
14.	9.4	29.7			35.0	12.4	23.2	6.0	58.2	29.1
15.	16.7	19.8	41.5	24.9	45.9	23.6	34.5	13.9	80.4	40.2
16.	19.8	21.3	43.4	26.6	32.6	16.0	27.6	9.6	60.2	30.1
17.	26.2	27.8	42.7	19.4	42.5	18.1	35.0	10.4	77.5	38.8

† Including Haryana.

We should, therefore, start our analysis on the basis of the 1951-60 growth rates. On this basis, the States may be grouped as follows: The first group, constituting 32.4% of the all-India population of 1971, and having 1951-60 growth rates around 15% or less, includes Andhra Pradesh (7.9%), Jammu and Kashmir (0.8%), Tamil Nadu (7.5%) and Uttar Pradesh (16.0%), the figures in brackets indicating the percentages of the 1971 population of India claimed by the State.

Jammu and Kashmir is much too small to deserve any detailed discussion. The 1951-60 growth rate is an estimate, since no census was taken in the State in 1951. It is low due to underestimation and the disturbed condition in the State then. This State has not done well in family planning, but it may well be that it may not in future keep to the high growth rate of 29.7% shown by it in 1961-70. Andhra Pradesh, a medium sized State, recorded a substantially higher growth rate of 20.9% in 1961-70 against 15.7% in 1951-60 in spite of having done pretty well in family planning. The explanation seems to be in the substantial decline in the high death rate of 25.2 for 1951-60. Considering that the Sample Registration Scheme (SRS) death rate around 1971 is 16.5, it is not improbable that the death rate may further decline by a point or two in 1971-80. This would call for an even greater effort in family planning to keep down the growth rate.

It is hard to explain the doubling of the growth rate of Tamil Nadu during 1961-70. It may be that the period experienced greater in-migration or there was a serious undercount in the 1961 Census, about which there was a suspicion. The State showed good progress in sterilisation, but a death rate of 19.5 around 1971 seems to have a potential of a further decline. This calls for greater efforts in family planning to arrest a rise in the growth rate in the future.

Uttar Pradesh has a poor performance in family planning but seems to have an unpleasant potential of accelerated population growth in 1971-80. Its growth rate showed a small increase from 16.7% in 1951-60 to 19.8% in 1961-70. Its death rate in 1951-60 and 1971 is high. A sharp decline in 1971-80 will have an ominous influence on the all India growth rate. Hope lies in the State continuing to be as inefficient in death control as in other welfare activities.

The next group of States, which touched growth rates around 20-23% in 1951-60, are Bihar (10.2%), Himachal Pradesh (0.6%), Kerala (3.9%), Mysore (5.3%), Orissa (4.0%) and Punjab (2.2%), which together make up 26.7% of the 1971 population of India. Bihar, a big State, showed only a small increase in the growth rate in 1961-70, as compared to its 1951-60 figure. The State has a poor record of performance in family planning and had the highest death rate of 26.6 in 1951-60. The SRS death rate of 16.0 around 1971 is seriously deficient. The potential of a higher growth rate of the State in 1970-80 exists. Himachal Pradesh is a very small State. The other four States are small too but have done fairly well—only Mysore did not come up so well. Punjab and Kerala had low death rates in 1951-60 and 1971, if the SRS figures can be relied upon. It seems likely that these States may show a reduced growth rate in 1971-80. Mysore and Orissa seem to have some scope for achieving a further decline in mortality, which will go to increase the growth rate unless checked by increased family planning activities.

The third group of States, which had growth rates between 23 to 27% in 1951-60, covers Maharashtra (9.2%), Gujarat (4.9%), Madhya Pradesh (7.7%) and Rajasthan (4.7%)—all medium sized States, together accounting for 26.4% of the 1971 population of India. They made some further addition in 1961-70 to their already high growth rates of 1951-60. Maharashtra, which has the best performance in family planning to its credit, registered a higher growth in 1961-70 probably due to a fall in the moderate death rate of 19.8 in 1951-60. The SRS death rate of 13.7 around 1971 is already low and perhaps suspect. The State may show a smaller growth rate in the next decade, if its family planning programme continues to grow. The same may not be true of Gujarat, which had a moderate death rate of 17.6 around 1971 according to the SRS. Considered in the same manner Madhya Pradesh and Rajasthan have the potential of a further increase in the growth rate, as their family planning programmes have not done too well and the SRS death rate is moderately high.

The fourth group of States, which had the 1951-60 growth rates of above 30%, includes Assam (2.7%), Haryana (1.8%) and West Bengal (8.1%). They together make for 12.7% of the 1971 population of India. The first two are small States—only West Bengal has a sizable population. Just as the greater success of Haryana in family planning has little significance for all India, so too the poor performance of Assam. West Bengal did not show any great success in family planning. In 1951-60, its death rate was high, possibly it declined in 1961-70. The SRS rates are not reliable for indicating the present levels of the death rate. It may well be that the growth rate of West Bengal may increase a bit in 1971-80.

The aim of the Indian programme is to arrest the increasing growth rate. The potential reductions in death rate will snatch away the fruits of acceleration in family planning. The higher growth rate shown by the 1971 Census created a sense of disappointment within the family planning programme. To avoid a similar situation in 1981, increased efforts in family planning are necessary. The irony of the situation is that, barring a few exceptions, the pace of the programme is slow in those very States, which have large populations and have a greater potential for further reductions in death rates. Due to their population size, they dominate the determination of the all India birth and death rates and hence the growth rate. It seems that the poor socio-economic development of these States is a common malady, which is responsible for these adverse features.

The differential performance of States in family planning has interested some scholars to apply the regression analysis technique taking a number of dependent variables. Some of them are highly correlated between themselves, which makes the task of isolating variations due to each difficult, owing to the existence of multi-collinearity. The work done is of interest in identifying the best "predictors" of performance but analytically throws little light on factors which promote family planning acceptance. Nevertheless, some conclusions reached are worth reproducing here. Misra[2] took 11 dependent variables including literacy (1971) and proportion of urban population (1971) along with three alternative measures of State family planning performance—the cumulative rate of IUD and sterilisations per 1,000 population upto 1971-72, the percentage of couples protected by all methods till 1971-72, and the IUD and sterilisation acceptors per 100 eligible couples in 1971-72. The literacy rate, which was considered, is the usual censal rate based on the number of literate persons per hundred population aged 5 and over. His zero order correlation of percentage couples protected with per-cent urban population is 0.4896, and with per cent literacy, 0.5767 (95% confidence level, 0.4821). The coefficient of correlation between these two independent variables is 0.3533. He diverted his attention to identifying powerful "predictors" and found that among the four variables, the per capita income for 1964-65 (variable 8), the per capita consumption of electricity for 1968-69 (variable 9), medical and para-medical personnel per 10,000 eligible couples, 1969-70 (variable 12), and expenditure on family planning per 1,000 eligible couples, 1968-69 (variable 13), variables 8 and 12 explain 80% of the variation and variables 13 and 9, 79%, against 34% of the variation explained by all the four variables together.

Parthasarthy[6] studied the correlation of the percentage of couples protected upto March 1972 (x_1) with the percentage of literate females (x_2), the percentage urban population (x_3) and percentage of working females (x_4). The percentages are based on the 1971 Census. He did not find x_4 important. He got $r_{12} = 0.41$ (just short of significance), $r_{12\cdot 4} = 0.49$ and $r_{12\cdot 34} = 0.44$ which means that

17% of the variation in State family planning performance was explained by variations in female literacy and that the other two variables, x_3 and x_1, did not materially improve this correlation. His value of r_{13} is 0.56 (significant) and $r_{13\cdot4} = 0.69$ showing that 31% of the variation is explained by x_3 and controlling x_4 improves the correlation. He did not calculate $r_{13\cdot24}$, which could throw further light. His conclusion is that the proportion of urban population exerts a more powerful influence on family planning acceptance than literacy. As we shall see below, the two are not significantly correlated.

Agarwala,[7] in his study took 18 independent variables with the acceptance rates of sterilisations, IUDs and conventional contraceptives clubbed together for each of the years during 1967-68 to 1969-70 and the whole period as the dependent variable (x_1). The 1971 Census data not being available then, he had to take recourse to the 1961 Census data. For predictive analysis, he took medical and para-medical personnel (x_2) and expenditure on family planning per 100 eligible couples (x_3) and grouped them under manipulative variables (x_m). He also took the percentage of urban population to the total (x_4), the general literacy rate among the population aged 15 years and above, and the per capita income (x_6) and grouped them under non-manipulative variables (x_n). His correlation values are $r_{12} = 0.7549$, $r_{13} = 0.8085$, $r_{14} = 0.0488$, $r_{15} = 0.3466$ and $r_{16} = 0.5449$. He got $R^2_m = 0.6834$, $R^2_n = 0.3127$ and $R^2 = 0.8712$, the symbol "R" representing multiple correlations. Thus, of the total variation of 87% explained by x_n and x_m taken together, 19% is explained by x_n, 56% by x_m and 12% by interaction. This shows the importance of manipulative variables. The problem requires further analysis than what has been done.

Narayan Das[8] has done a service by drawing pointed attention to the problem of multicollinearity. He applied factor analysis to locate a set of orthogonal factors by grouping variables measuring the incidence of one or more underlying common factors. He took the average acceptance rate of States during 1966-67 to 1969-70 (clubbing sterilisations, IUD and conventional contraceptive users) as the dependent variable and 11 independent variables. He identified three orthogonal factors, which together explain 80% of the total variance. The first factor, F_1, which had "urban environment" as the common underlying factor, explained about 34% of the total variance, the second, F_2, with "family planning facilities" as the common factor, 29%, and the third F_3, which remains unidentified, 17%. Discarding F_3, he found that F_1 had a regression coefficient of 0.6498 explaining 42% of the total variance and F_2, a regression coefficient of 0.4610 explaining 21% of the total variance. Both regression coefficients were found to be significant at a 1% level. He concludes that the prediction equation which accounts for only 63% of the total variance needs improvement and probably some new variables may have to be introduced. His analysis established the importance of urban environment.

The Year Book[1] gives the rural-urban break-up of sterilisation and IUD insertions for India for the years 1966-67 to 1971-72. The percentage of sterilisations done in rural areas varies from 55 to 65, and of IUD insertions, around 60. These figures do show a greater acceptance of family planning per thousand population in urban than in rural areas. However, they do not give the complete picture. The acceptance rates in the urban and rural areas, obtained by Mr. P. K. Jain in his study, are presented for the first time in Table 2. It is seen that acceptance of family planning in rural areas is uniformly low and much below that in urban areas in all States except Maharashtra. This exception has been discussed in some detail earlier and seems mainly to be due to the Helpers' Scheme and the cabinet directive to involve local leadership. The undisputed top performance of this State is due to a strong rural base. The States fall in the following groups on the basis of acceptance rates:

TABLE 2

Urban and rural acceptance rates

Urban Performance	Rural Performance
Group I Kerala (116.7), Assam (110.0), Andhra Pradesh (102 6)	Maharashtra (49.4)
Group II (3rd Fractile 54-74) Orissa (73.6), Himachal Pradesh (64.2), Haryana (59.0)	(3rd Fractile 23-30) Gujarat (30.4), Haryana (25.9), Tamil Nadu (25.7), Orissa (24.8), Madhya Pradesh (23.7), Punjab (23.1)
Group III (2nd Fractile 36-54) Gujarat (51.8), Bihar (51.1), Maharashtra (45.3), Tamil Nadu (42.0)	(2nd Fractile 16-23) Andhra Pradesh (20.8), Kerala (19.0), West Bengal (18.0)
Group IV (1st Fractile 18-36) Madhya Pradesh (30.5), Punjab (30.5), Jammu and Kashmir (24.1), Karnataka (22.6), Rajasthan (21.7), West Bengal (19.7), Uttar Pradesh (18.2)	Karnataka (15.4), Bihar (13.4), Uttar Pradesh (13.7), Jammu and Kashmir (12.0), Assam (10.7), Rajasthan (9.2), Himachal Pradesh (6.2)

The figures in parentheses give the actual rates.

The acceptance rate represents the average annual sterilisation plus 1/3 IUD insertions per 1,000 couples as of 1971, during the period 1969-70 to 1972-73. The factor "1/3" has been introduced to convert IUD insertions into equivalent sterilisations, as adopted officially.

Generally speaking, States in Table 1, which are high up in performance have their strength in the rural acceptance rate. On the contrary, States which are low down in Table 1 are also low in Table 2 in the matter of rural performance. Some exceptions are Kerala and Andhra Pradesh, which are not so strong in their rural performances and seem to have raised their overall performance due to very high urban acceptance rates. On the other hand, Madhya Pradesh has improved its overall position due to a fairly high rural acceptance rate. The above discussion gives an insight into the rural and urban situations.

TABLE 3

Percentage literacy among population aged 15 +

State	Acceptance rate		Urban		Rural		Both areas	
	Urban	Rural	Male	Female	Male	Female	Male	Female
Group I								
Kerala	116.7	19.0	85.9	67.4	78.2	57.8	79.5	59.4
Assam	110.0	10.7	75.7	58.7	45.4	17.8	48.8	21.3
Andhra Pradesh	102.6	20.8	68.1	37.2	31.1	10.5	38.5	15.6
Group II								
Orissa	73.6	24.8	70.9	38.7	44.0	11.4	46.5	13.5
Himachal Pradesh	64.2	6.2	76.6	54.2	39.3	13.1	42.8	15.8
Haryana	59.0	25.9	69.8	39.4	34.2	9.2	41.3	14.0
Group III								
Gujarat	51.8	30.4	77.4	48.7	47.0	17.1	56.3	26.1
Bihar	51.1	13.4	65.3	32.8	33.3	6.1	37.0	8.5
Maharashtra	45.3	49.4	78.3	51.3	52.1	15.8	61.6	26.4
Tamil Nadu	42.0	25.7	79.2	47.4	51.8	16.5	60.4	25.7
Group IV								
Madhya Pradesh	30.5	23.7	74.3	39.3	33.2	5.7	40.5	11.0
Punjab	30.5	23.1	66.4	46.9	34.2	16.5	42.3	23.8
Jammu and Kashmir	24.1	12.0	55.9	28.1	23.2	4.0	29.5	8.5
Karnataka	22.6	15.4	71.5	43.5	40.9	12.9	48.9	20.5
Rajasthan	21.7	9.2	64.4	29.5	23.6	3.4	31.3	8.0
West Bengal	19.7	18.0	69.5	51.9	46.9	14.8	53.9	24.1
Uttar Pradesh	18.2	13.7	61.4	34.3	30.3	5.9	35.1	9.7
All India	45.2	18.0	72.1	44.9	39.6	12.6	46.9	18.9

Shri P. K. Jain is making a study of the rural and urban rates with reference to socio-economic factors. I am grateful to him for permitting me to give some of his results in advance. He has succeeded in obtaining, in advance, the rural/urban literacy figures for the population aged 15 years and over. These literacy rates for 1971 for men and women aged 15 years and more in rural and urban areas have been presented in Table 3 for the first time. He finds that in regard to the acceptance rates in the urban areas, the regression coefficient of the male literacy rate is 0.12 and the correlation coefficient 0.53, which are significant at a 5% level. The corresponding figures for female literacy are 1.61 and 0.53, both significant at a 5% level. In the urban areas, both the male and female literacy rates are high. It is also a common practice that educated husbands take educated wives, though not always of the same educational standard. This may explain the similarity between the male and female responses.

As for the rural areas, neither regression nor correlation is significant in the case of male and female literacy. For males, the regression coefficient is 0.45 and the correlation coefficient 0.35. Corresponding values for females are 0.11 and 0.13. Female literacy is pitifully low and the range of variation between States is narrow. As a matter of interest, it may be mentioned that P. K Jain obtained a regression coefficient of 0.22 and a correlation coefficient of 0.35 per cent for urban population and the literacy rate of the general population aged 15 years and over. Both are not significant.

Statistical analysis apart, it is self-evident that to make a dent, family planning has to be stepped up in the vast rural population. But, urban areas have a priority as they have the requisite economic and social environment along with the comparatively easy system of supplies and services for family planning. The above discussion should serve to highlight the importance of studying urban and rural populations separately instead of lumping them together. A hope may be expressed that the Department may seriously consider collecting and publishing family planning data in a rural/urban breakdown, as the two areas represent different worlds so far as the family planning programme is concerned.

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SOCIOLOGICAL APPROACHES TO POPULATION PROBLEMS *

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One of the stumbling blocks on the road to social progress is the rapid growth of population all over the world. The need to check the increasing numbers is keenly felt in every part of the globe.

Huxley[1] attempted to explain the problem by giving figures which are very alarming. There has been an enormous increase in the size of the world's population from a mere 1,608 million in 1900 to 3,600 million in 1970. The earth can only support a population of 7.5 billion to 50 billion. Knibbs[2] estimated that if the offspring from a single couple were to grow at the rate of 1% a year for 10,000 years, it would require 248,293,000 billion earths to hold the bodies of these people. Our present rate of increase of world population is 2% and is expected to go as high as 2.6% by the year 2000.[3] This shows that there is an alarming situation ahead for this world.

Looking at the Indian situation one would be still more alarmed and bewildered by the abnormal rate of growth as compared to that of other countries. India is the second most populous country in the world with a population of 547 million according to the 1971 Census. During 1951-61 the increase was 79 million and the rate of growth, 21.49%, while during 1961-71 the increase was 109 million, and the rate of growth was 25%. While the population has been increasing production has not been increasing concomitantly. This again shows that India is facing and will face a number of hardships in feeding and maintaining the country's increasing number of mouths, which will retard social progress. The problem is very imminent and a sociological study is pertinent at the present juncture.

Some theories under review

The itch of the problem was felt when Malthus,[4] an Englishman, explained the theory of population. He was an economist and social reformer interested in social progress and felt the need for controlling the fast growing population. He was very much concerned with the

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* The data for this paper was collected by the author from books, through interviews, observations and discussions with various groups of people for over a decade.

problem and developed a theory in 1798. He made two postulata, one, "that food is necessary for the existence of man" and two, "the passion between the sexes is necessary and will remain nearly in its present state". He went on to say that "the power of population is indefinitely greater than the power in the earth to produce subsistence for man," and "population, when unchecked, increases in a geometrical ratio. Subsistence increases only in an arithmetical ratio".
The ratios Malthus had in mind were :

Population : 1-2-4-8-16-32-64
Subsistence : 1-2-3-4- 5- 6- 7

According to Malthus, the population would increase to 64 times its original size in 150 years, while subsistence would increase to only 7 times its original amount. This would lead to so much disjunction between numbers and consequently to social chaos.

Whatever worth and weaknesses his theory had, it contributed to the understanding of the gravity of the situation Social scientists felt perturbed and started examining this social phenomenon. One of these, Michael Sadler[5], an English social reformer and economist, and a contemporary of Malthus, believed that the natural law of population growth was exactly contrary to that expounded by Malthus. Unlike Malthus, he felt that the tendency of human beings to increase in number would diminish naturally as the density of settlements increased and that numbers would cease to grow at the exact point where the number of people would enjoy the greatest happiness, all other things being equal. Following Sadler, Thomas Doubleday[6] gave a similar explanation, but with a different tone According to Doubleday if the quality of food increased, the reproductive capacity would decrease. It would implicate that the higher class person would produce less children than the lower class person does. So, he pleaded that better food should be provided to decrease the number of people. Of course, the whole problem thus seemed to be that we are neither able to provide good food nor are we able to control the numbers and it is not possible to explain why lower class people produce more children. If there were good food, we would not consider this as a problem at all.

An Italian scholar, in line with Doubleday, De Castro,[7] explained that a high protein content in the diet reduces fecundity while a low protein content tends to raise fertility. This theory also falls back as that of Doubleday's.

Karl Marx[8], one of the world's well known scientists, explained the problem of population through capitalism. The root cause of the population problem, he said, was the result of the exploitation of the proletariat by the *bourgeois*. The panacea to the problem was communism, he said. In a communist society all evils would automatically be eliminated. This theory also seems to have a number of drawbacks though it attracted many scientists.

Corrado Gini[9], another Italian scholar, explained the population problem in terms of social class. Gini held that different rates of increases among different classes or sections of a national population led very rapidly to changes in the biological traits of entire populations. According to him, some people are hereditarily most prolific, that is, highly fertile. Such a nation or a class grows rapidly in numbers. This growth in numbers is accompanied by growing complexities of organisation as one manifested by the development of social classes. The next stage, according to him, is that when the complexity of social and economic organisation increases, fertility would decrease. This means that higher classes will have more complexities and consequently lesser number of children. Gini believed that the biological factor in declining fertility was the fundamental factor that really underlies the influence of economic and social factors. Also, this decline takes place in the upper classes and not in the lower classes. This gives rise to a feeling based on an observation of our society that the upper classes have lesser number of children than the lower classes.

Arsene Dumont[10] propounded the theory of social capillarity. According to this theory, the individual tends to mount to higher levels in his social environment by a process similar to physical capillarity. In the process of climbing upward he becomes less and less likely to reproduce himself. He is drawn out of his natural milieu and away from the family. As a consequence he loses interest and his interest is only moving upwards. He cites the caste system in India as one of the examples. The Hindu caste structure prohibits any mobility either upward or downward and hence offers no possibility for a decline in the birth rate. This theory does not fully explain our problem but there seems to be some relevance in explaining the population problem. The system introduced certain taboos which prohibited the common man to think rationally about anything. This system works negatively almost as a barrier on the road to change in any aspect, including a change in the mentality of the people.

Carr-Saunders[11], another English social economist, explained the population phenomenon in terms of economic productivity. According to him the slum areas in urban centres generate more numbers whereas higher classes produce less numbers. He argued that higher class persons treat their children as liabilities, whereas the lower class persons treat them as assets. Therefore, the tendency among lower class persons would be to encourage more children.

The above theories and the common observation indicate that the lower socio-economic class tends to produce more children and the upper produces fewer children. Between the rural and the urban areas, the former produce more children than the latter and in the urban areas, persons living in the slums and those belonging to the lower classes, produce more children than the others. Similarly, the lower castes tend to produce more children than the upper castes.

India being a highly religious country, customs and traditions appear to stand in the way of the people's adoption of birth control. It seems that women are more conservative than men and rural people are more conservative than urban people. It is also plausible that lower class/caste people may be more conservative than upper class/caste persons. This is probably due to the rather considerable proportion of illiteracy among Indian women and among the lower classes/castes besides the prevalent age-old beliefs and religious systems. For instance, upper class/caste people teach and develop a belief system but hardly follow it, whereas the lower caste/class people follow blindly whatever the higher classes teach. Similarly, men who themselves do not have genuine faith in god and in religion and yet, as religious heads, profess and teach women that they should believe in god and religion. These factors show that some kind of a belief system has been built in the name of tradition and culture which in turn are blocking any changes that are being introduced in the country. Family planning has been popularised in urban and rural areas and among the higher and lower castes/classes, but it is hardly followed and implemented among the latter and especially among women, whereas this is not the case among upper classes and castes. The people belonging to the lower economic classes/castes and particularly the women, have more real faith in the beliefs given to them by their higher class brethren. They think that family planning is an artificiality and they do not accept it out of ignorance whereas the upper classes and castes have more knowledge about the world and are aware of the pros and cons of this new introduction. The latter thus, accept family planning methods and benefit by them, though they rarely express it.

The success of the family planning programme, then, would depend upon the ushering in of a change in the belief and value systems in our society, besides the efforts which our planners have hitherto been making in the field of family planning. Such a change should be in consonance with the demands of society and of the people belonging to the lower socio-economic strata, the rural and urban slums more especially, the women, by adequately exposing them to the realities of life and by educating them with a view to making social progress through birth control.

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NEED–BASED FAMILY PLANNING PROGRAMMES: CONTENT AND TREATMENT GUIDELINES FOR T.V. PRODUCERS

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Regulation and control of fertility is essentially an individual decision and it is taken by the individual at his own level, usually in consultation with some significant persons. Such a decision reflects the acceptance of change on the part of the individual. A significant role can be played by communication sources like the Television in hastening this process of change in the individual. There are several ways in which the communication source can influence the decision making process at the individual level. An understanding of the points of intersections (TV programmes) influencing decision making, and working out the strategies of influence require some understanding of the factors affecting, and the processes involved in, the decisions to adopt family planning practices. These are presented below with three models of human behaviour and some communication strategies.

Description

Model 1:

According to one model of human behaviour described in detail elsewhere[1], fertility behaviour may be treated as a dependent variable, the independent variables influencing this being: motivation, values, and attitudes of the person, his perception of the reward and punishment for his behaviour, the society (the community) and its various characteristics, the family and other socializing agencies.

According to this model, adoption of family planning methods by individuals are influenced by factors at three levels: individual, family and society. The process of the use of methods of fertility control by an individual can be understood by considering factors at the *individual level* including the personality structure of the individual, his motivation, his values, level of education, socio-economic status, caste, religion, sex, age, occupation, etc. Several researches have been conducted establishing the association between these factors and acceptance of family planning. The programme strategies discussed below are based on these findings.

At the level of the family, factors like family structure, orientation of the family to modernisation, social values, husband-wife communication patterns, marriage systems, security, etc., have been found to influence decisions to adopt family planning. *At the community level,* the customs and beliefs in the community, the structure of the community, the role of leaders and other persons who exert influence, place of residence, class, membership in social organisations, group affiliations, etc , have been found to play a great role. The implications of these findings for strategies of TV programmes have been reported here. While the strategies mainly emphasise what should be done they also touch on a few aspects on what could be avoided.

Programme implications of Model 1 :

1. Modernisation attitudes have been found to contribute to small family preferences. Communication media have in recent years taken note of the importance of such modernisation attitudes for higher productivity of the nation and the society. Programmes reinforcing modernisation attitudes in people are likely to help in an indirect way the propagation of fertility control. Fashions, new designs, acceptance of improved methods in all aspects of life, etc., should be reflected in the programmes. These may bring about a gradual awareness and contribute, at a later stage, to increased acceptance.

2. Security in the issues of struggle for land and property ownership ; caste feuds, and family feuds, economic security, lack of health consciousness, high child mortality, etc., have been found to act as barriers in the motivational process for accepting family planning. Programmes to counteract these barriers may be useful. A psychological weighing goes on in each individual, at a conscious or subconscious level, about the pros and cons of the acceptance of family planning. Large families are preferred for the kind of reasons mentioned above. Counteraction programmes may increase the weightage on the negative aspects of larger families, at the same time indicating the positive aspects of small families. For example, division and fragmentation of land as against security in the issues for struggle for land may be a good theme taken up in TV films. Stories could be built around such themes. The creation of health consciousness among the public is important and programmes on health hygiene and nutrition may concentrate on the ill effects of having more children

on the children's as well as mother's health. Studies of child mortality have shown that there is a very high rate of mortality in the first three years of children's lives. Programmes on how to ensure children's survival and good health may help motivation limiting the family, if such programmes are linked with family planning.

3. Education has been found in several researches to influence the acceptance of family planning. This has an important programme implication. Educated persons have access to several channels of information and also have opportunities to discuss these topics. Television, at present, is one of the potential but rare resources for the less educated. Television could be geared to the needs of the less educated who need more information, more choices, and need to be motivated to limit their families.

4. Researches in general have pointed to a high level of acceptance of family planning in the high socio-economic groups. People from low income groups were found to have less information and intention to accept. This is because of their pre-occupation with problems of survival, low aspirations and sense of achievement, and their perceptions of children as assets and work force for which no investment is necessary. Programmes boosting up their aspirations, demonstrating how they have opportunities to educate their children who can aspire to occupy important roles might motivate them in the long run to accept family planning.

5. Several studies have pointed out the effects of large sized families on the health status of the family members. Increased family size results in increased illness, malnutrition, high child mortality, ill effects of physical growth and intellectual development, economic and emotional stresses, etc. Televised population education programmes should highlight these aspects in a forceful way.

6. Communication between spouses was found to be an important factor influencing decisions to adopt family planning. In our culture, interspouse communication on matters of family planning is rather low, especially in rural areas. Programmes should also depict how joint decisions could be made by the husband and wife and how matters could be discussed to plan their family life, etc. Some family decision sessions and discussions could be filmed.

7. Shyness is an important factor that prevents people from seeking information on sensitive matters like sex and contraceptives.

People in general need to be desensitised to a great extent and an environment where free exchange of ideas, etc., can take place should be created. One way of desensitising people is to expose them to as much of contraceptive material as possible, and to discussions about them through films exclusively made about them.

8. Early age of marriage is one factor which influences population growth to a great extent. Studies show a general tendency of early marriages in rural areas and in the target population which TV programmes have to aim at. Although, recently, awareness of the advantages of late marriages is increasing, much work needs to be done in this area.

9. Several false beliefs have been found to exist among rural people with regard to family planning. Several researches on resistance to family planning have indicated this time and again. Beliefs related to a phenomenon have been found to influence acceptance or rejection of the phenomenon. This is true of family planning also. Such beliefs have been found to be widespread. Special programmes need to be designed to tackle these beliefs. Authentic information given by doctors, leaders, etc., is likely to remove such beliefs. Population education programmes may play a significant role in this connection. The following are some common beliefs that need to be tackled and removed—

(a) Family planning through contraception is a sin.
(b) Using contraceptives is against one's religion.
(c) The will of God determines the size of the family.
(d) The use of contraceptives leads to loss of sexual potentiality.
(e) The use of contraceptives leads to loss of mental equilibrium.
(f) Contraceptives are irreversible (i.e., once you adopt a contraceptive, you cannot have any children at all even when you want to have them).
(g) Contraceptives spoil health.
(h) The intrauterine device (IUD) goes to the heart when inserted.
(i) An IUD insertion causes the death of one spouse or both.
(j) The male organ striking against the loop creates complications.
(k) Sterilisation means castration and impotency.
(l) Sterilisation leads to loss of the partner.

10. There are some social taboos attached to the use of contra-

ceptives. Although these are gradually fading away, they are still working in some areas against a quick acceptance of family planning. Population education can again take care of these problems. The curricula for such population education programmes are being developed at places like the National Council of Educational Research and Training (NCERT). While the NCERT is concentrating on the formal educational system, packages need to be developed, particularly to suit the needs of rural people.

Model 2 :

Another model useful in throwing light on the dynamics of the use of and acceptance of the methods of population control by the individual is the adoption model of behaviour. According to this model, adoption of a new practice is a function of at least four factors: the personal characteristics of the adopter, the practices recommended for adoption, influentials, and change agents. According to this model, family planning is to be understood in terms of adoption of new ideas and behaviour. Of the four factors, the personal characteristics of the individual have already been mentioned above. The practices recommended (use of condom or sterilisation, etc.) form an important variable in the model of adoption. The perception of practices by the adopter is important. Other aspects of the practices are : the perceived consequences of adoption, the degree of dissonance of the practices recommended with other significant aspects, the perceived difficulty the adopter may have in adopting a particular practice, etc.

Programme implications of Model 2

Some individual factors that could be dealt with have already been covered in the earlier section. There are several other personal factors influencing the acceptance of family planning (or any new idea for that matter) which are difficult to be manipulated by mass media. However, mass media like the TV can play a significant role in relation to the other factors involved in the acceptance of new ideas.

A significant role could be played in recommending several family planning practices. One research finding has been that the educated have several choices before them and such availability of choices increases the probability of accepting one of them. Unfortunately, rural, uneducated, low economic status people have only a few choices available to them. Usually their friends are the main source of information. This results in a limitation of choices. Programmes meant for this set of people should bring to their notice as many practices as possible to increase their choice alternatives. Mere information about the existence of the alternative practices may not be much useful. Complete information about the specific purposes and conditions under which the methods should be used, advantages, limitations, reversibility, after effects, instructions for users, follow-up instructions, technical help available, facilities, etc., should be presented to the user to make his decision making easier. People may have already developed by now certain attitudes towards specific practices. Programmes concentrating on the practice relevant to the individual's needs also need to be developed. Influential and change agents play a great role in the acceptance of new practices. Several such sources of influence, the role influentials can play, and the areas where they are likely to be effective with implications for the family planning programme, are described under the third model. Identifying such community influentials and change agents and using them for pursuation purposes, etc., is necessary.

Model 3 :

The third model of behaviour which has a significant component of implications for TV programme organisers deals with the sequential process in the adoption of family planning practices. Adoption of a new idea and behaviour does not take place all of a sudden. Adoption has a sequential aspect. It takes place through several stages. Some stages that have been generally accepted are: the emergence of a need, the presence of a need, the persistance of a need, the awareness of the alternatives or explorations for information about the alternatives, interest reinforced by information about the alternatives and information about the users and relative effectiveness of the alternatives, deliberation—consultation—deliberation, trial, evaluation, adoption and integration. This is somewhat an elaboration and includes several possibilities which may be totally absent in some cases. It might boil down to the need-awareness-interest-deliberation-trial-evaluation-adoption-and integration model offered by Pareek and Singh.[2]

Programme implications of Model 3

According to the third model of sequential adoption, the underlying psychological process at the need stage is arousal, resulting in readiness and characterised by dissatisfaction with the present state of affairs, more specifically with the current practice. The model suggested above has implications for creating dissatisfaction in the respondent if he has a large family or has been opposing family planning, and for creating an awareness of the need to have a small sized family and thus make him ready to hear things about family planning. This is an important phase and needs special attention at the beginning of the programmes. If the programme starts straight away with mass vasectomy campaigns, etc., and gets to the core of family planning, it is likely to be least effective. Programmes should be attempted to follow a similar sequence as the sequence of adoption.

Groups of people in the population of the six States that are going to be exposed to the TV satellite programme may be at one or the other of the above stages. Researches do indicate that a certain percentage of the nation's population is not at all aware of the need for population control. Studies indicate that some people are aware but they don't feel the intensity and some feel the need but they don't think that this (fertility control) is feasible enough to be achieved (as they are not aware of the methods). Some others may be aware of the alternatives but do not know much about them; still others may be aware of the alternatives also and could be deliberating over them; some may be at the trial stage, some at the evaluation stage, and some at the final adoption and integration stages. Thus, the audience of the TV programme would be a mixed audience and likely to be at one or the other stages of the sequence of adoption of family planning practices. Randomly produced programmes are hence likely to serve the needs of only one or other group in this sequence. Hence the programmes should be planned to suit the maximum number of such audiences.

One useful strategy may be to start the programmes by concentrating on creating the need for making the audience aware of the need for fertility control. This is specially needed for the rural sector. In the earlier stages, themes of the programmes produced may centre round creating such a need. Such a need may be created by demonstrating population pressures, effects of population density on society, the family and the individual, the consequences of fertility control, improved economic conditions, etc. Several programmes on these themes need to be produced. Any of the methods suggested in the last section of this paper could be used to communicate these themes. Thorough care should be taken to see that rural populations are particularly attracted to these programmes. After the concentration of efforts on arousing needs in the public for the first few weeks/months of the programme, the programmes may go to the next stage of informing the audience on the possibility of fulfilling the need. This stage would be the information-giving stage of population control and the family planning programme. This stage of TV programmes may include information-giving programmes on methods of fertility control, conditions under which they can be used, demonstration programmes on how several people are using and trying to permit the families the facilities available for interested users, the role played by different agencies in the promotion of these programmes, and so on. Programmes produced on these themes will serve the dual purpose of reinforcing the already existing needs in the audience to limit the family and also helping them to know the techniques available to fulfil the need. While the programmes on people using them, agencies promoting them, etc., are likely to cater to the former, technical information on contraceptives cater to the latter. Interest already would have set in by this time among those who did not earlier possess it, and this curiosity would be fulfilled by the technical information programmes. Programmes could be supplemented with free distribution of reading literature to the audience. This arrangement could be worked out with voluntary and governmental agencies engaged in family planning work.

The next series of programmes should concentrate on the evaluation of several alternatives, trial experiences of people, figures of usage of different methods, after effects, etc. This would help the audience to come nearer to the stage of adoption. These programmes would also help to reduce the deliberation period and quicken adoption or trial-evaluation and adoption. Programmes at the previous stage and this stage put together may also reduce the long processes of adoption to a simple three stage one of need-knowledge-adoption, although several dynamics may be involved in each of these stages.

The fourth stage of the programme may centre round follow-up information and themes of integration. After the adoption people may be dissatisfied with some methods or they may get panicky with simple complications that come up and so on. In order to sustain the motivational process and continue adoption, programmes on after effects, complications and how to deal with those complications need to be planned. At this stage it is also important to have programmes that constantly remind the audience of the need to control population for a happy future. So programmes of the kind used in the beginning may also be shown again although with a lower frequency.

These stages need to be followed in a sequence. However, as the audience already contains people at different stages of this sequence, it may be useful to run a few programmes relating to stages 2, 3 and 4 in decreasing order of frequency, while programmes related to the first stage are run ; 1, 3 and 4 when programmes related to the second stage are run : 1, 2 and 4 when programmes relating to the third stage are run ; and 1, 2 and 3 when programmes relating to the fourth stage are run. A suggestive model is presented below.

FIGURE 1

A suggestive model of the sequential concentration of programmes relating to different phases of adoption

	Stage 1	Stage 2	Stage 3	Stage 4
Frequency	S1	S2	S3	S4
	S2	S1	S2	S3
	S3	S3	S1	S2
	S4	S4	S4	S1

S1=Programmes to create awareness of the need or the need itself
S2=Programmes providing information about the methods of catering to the needs and facilities available, etc
S3=Programmes giving trial, experiences, relative advantages, experiences of users, etc, to enable quick decision making
S4=Programmes giving follow-up information, dealing with problems, etc

Communication strategies

The above models and implications are suggestive of the organisation of the programme in terms of the different phases of organising the programmes, sequencing of the programmes, the contents to be covered, the target population to be reached, and so on. Some suggestions have been made relating to the content areas to be covered by these programmes. The details need to be worked out by the programme planners. Keeping the areas to be covered in mind, some of the communication strategies have been presented below. Researches have shown that different sources of communication are effective at different stages of adoption. Based on these findings, strategies of TV communication are suggested below, regarding the sources to be used in communicating the messages, the method or mode of communicating them, and the work of some agencies which may be televised. The sources suggested are presented in Table 1 with the rationale. The models with the rationale are suggested in Table 2. The tables are self-explanatory and may help TV producers.

TABLE 1

Sources that can be used for TV communication

Person	Content	Rationale
1. Physicians	To provide information about the methods of family planning. To demonstrate the ease of some of the methods. To remove beliefs about some contraceptives To provide follow-up information. To give information on the role of the clinic and the doctor To give information on the role of the patient. To give information on the effects of larger families. To demonstrate the problems of patients handling themselves.	The doctor has high credibility and he is likely to be accepted. He should figure in full hospital dress and in a hospital setting. This increases the authenticity of information. Doctors who are known in the community should be chosen. The sex of the doctor is important. Female doctors may be effective for talking about contraceptive methods for the female Programmes in men's series and women's series may be arranged.
2. Village leaders	To share information on some successful programmes they have launched. To discuss about the advantages the village has got due to population control. To discuss the division of land and other problems arising due to increased family size. To motivate other village leaders to be promoters and acceptors of family planning.	Involving them in village-side chats and conversations would attract other villages to model on these lines.

TABLE 1 *Contd.*

Person	Content	Rationale
3. Effective users	To assure the people about the advantages of family planning and the ease with which contraceptives could be used. To inform the people about the problems they faced, how they tackled them and the returns they got for the investment they made in tackling the problems. To inform about the health problems associated with some contraceptives. To motivate non-users through persuasion. To clarify beliefs against family planning. To eliminate fears among the public by expressing similar fears they had and how they turned out to be false.	The rationale is again credibility. A user is more effective than a non-user. A user is reliable and by focusing on the case histories of effective users the public may get a lot of insight It will be easier for a person to accept family planning when he knows that the problems he has in accepting it are universal fears and are unrealistic.
4. Nurses, midwives, paramedical personnel. field workers and social workers, etc.	To share their experiences with patients. To share information about people overcoming resistance. To remove some fears. To point out the causes of resistance (sensitising people to their own resistance). To describe the facilities and the administrative set-up.	They may have a rich experience of the problems of rural people because of their closer contacts with rural people resulting from their field work
5. Religious persons	To counteract religion-based and morality-based fears, guilt and conflicts in villagers as resistors to control. To clarify religious stands and to suggest acceptable methods for resistors.	Research suggests that quite a few people resist family planning on the grounds that it is immoral and against religion, etc. People concerned with these aspects may be effective in removing such fears.

TABLE 1 *Contd.*

Person	Content	Rationale
6. Teachers	To provide some elements of sex education. To teach health and hygiene to students and parents and approach the question of family planning in an indirect way. To emphasise the necessity of population control.	Teachers are still considered as sources of authority. As villagers do command a certain amount of respect, they are likely to be good influencers. They may also feel the future needs of implanting family planning ideas into children
7. Druggists	To provide information about the availability of easy contraceptives like pills, nirodh, etc. To tell the public about the demand for such contraceptives.	To make the audience feel the ease with which they can procure contraceptives. To remove their shyness by letting them know the demand for items like Nirodh. Shyness is likely to be a psychological impediment to the purchase and thereby the use of contraceptives. The public needs to be as much desensitised as possible.
8. Popular film stars	To inform the public about maintaining beauty through family planning To attract a greater audience to family planning programmes. To imprint in them the advantages of family planning. To change their attitudes towards family planning by actual films centering round family size themes.	Film stars are a strong source of influence. Many magazines in local languages carry advertisements using film stars for beauty items, toilet, requistes, cigarettes, etc. But we never come across such advertisements for family planning. Carefully chosen film stars can make a big impact.
9. Union leaders/ labour welfare officers	To take the message of family planning to the industrial sector and to workers.	Union leaders and labour welfare officers are likely to be effective in the industrial sector as the psychological distance between them and the others is lesser.

TABLE 2

Some suggested models in which family planning programmes could be organised

Method	Content/areas of coverage	Rationale
1. News	News items may cover the following areas : a. Discoveries of new methods of population control. b. Estimates of population problems. c Countries/areas facing population pressure and its impact. d. Growth rates. e Control of deaths and diseases. f. Facilities available for family planning. g. Price rise and its relationship with population pressure. h. The government laws, religious pronouncements, etc., related to family planning and population control. i. Sterilisation camps that are being arranged. j. The views expressed by religious / political / social leaders whenever it is difficult to get them. k. Achievements of countries that have been able to control their population etc., day to day events.	Information about the newer developments and what is going on round the world is likely to increase awareness of the importance of family planning and would help him to adopt it. It would increase his choice alternatives.
2. Dramas	Dramas depicting the consequences of population pressure at the societal family and at individual levels are needed. At the community level problems like overcrowding, unemployment, social problems like increases in crime, immorality, revolt,	Dramas are good and lively sources where problems could be depicted in a near to reality way. As they hold the attention of audiences for a longer period than lectures, speeches, etc., they have an advantage. Messages put across through such media are likely to get

TABLE 2 *Contd.*

Method	**Content/areas of coverage**	**Rationale**
	war, housing problems, transport, food nutrition education, etc., could be depicted. However, the community problems are more amenable to be depicted directly by films and could be touched only in an indirect way. Family problems and individual problems may be more easily depicted in dramas. Family problems like division of land, lack of privacy, conflict and quarrels over privileges, etc., could be depicted. At the individual level, frustrations due to problems, crime, suicide, mental stresses and strains could be depicted. Dramas could also deal directly with conflict in the family over acceptance of family planning, husband-wife communication and joint decision making, resolution *of conflicts, tradition* bound mother-in-law, decisions in the family, etc., could also be depicted However, such dramas need carefully planned out themes that need to be put across to the audience.	implanted strongly and open new avenues of thinking for the tradition-minded.
3. Songs	Songs related to family planning. Well known playback singers are likely to be effective. Cinema tunes need not be copied as they are likely to be joked at. New tunes may be developed and. somewhat philosophical songs depicting population problems are likely to touch the listeners.	This is another way of holding the interest of one set of the population.

TABLE 2 *Contd.*

Method	Content/areas of coverage	Rationale
4. Talks	Talks could be arranged on several topics. Some suggested areas and agencies that could be used are presented separately.	Talks would have an informative and pursuasive value if the speaker is carefully chosen and motivation is inbuilt.
5. Interviews	Interviews with doctors, nurses, field workers, paramedical personnel, contraceptive users, persons who have undergone sterilisation, persons intending to limit families, religious and social leaders, etc., might popularize the programme and motivate people.	Interviews with persons with actual experience are likely to remove fears and create hopes and point out the processes for those interested.
6. Panel discussions	Panel discussions may be meant for somewhat educated audiences. Besides the categories of persons suggested above, educationists, demographers, family planning research workers, economists, etc , may be involved.	Panel discussions present several ways of looking at problems and point out several dimensions of family planning.
7. Documentaries	Documentaries showing actual problems of crowding in cities, problems of housing, pavement dwellers, suburbs, economic and other crises, with a good causal analysis are likely to be educative.	Showing the actual problems from the different parts of the country might help people take precautionary measures to prevent population growth.
8 Question-answer programmes and quizes	These would be mainly information centered. Could have broad coverage on population and include figure work besides knowledge about family planning methods, etc.	Such shows have the capacity to hold the attention of the audiences Open quizes making the audience effectively participate by giving questions in one session and answers in another are likely to be attractive. Prizes could also be given as incentives.

TABLE 2 *Contd.*

Method	Content/areas of coverage	Rationale
9. Films	Exclusive T.V. films of population problems could be made. Themes suggested for dramas are all applicable equally for films. Community problems would be depicted better through films.	Short feature films may be made using some of the popular film stars in some roles. They draw bigger audiences.

There are several family planning projects going on in the country. Such programmes may have a lot of educative and change value for the public. Seeing groups of people discussing family planning, several people may come forward to know more about it and later, perhaps, also use a method. Queues of people waiting to get sterilised or women waiting for loop insertions, etc. (if such queues could be found anywhere), persons coming for consultation, schools making educational campaigns, mass vasectomy campaigns, etc., are likely to exert a tremendous influence on the viewers. The following are a few such areas the producers may look for:

Mass vasectomy campaigns

Mass vasectomy campaigns have been organised very successfully in a few districts in Kerala and Gujarat. Exhibitions, local announcements, hand-bills, personal communication, etc., formed an integral component of these campaigns. In such campaigns thousands of people got sterilised. Such camps are being organised now and then in different parts of the country. Televising the whole campaign with a considerable amount of focus on campaign exhibitions and people getting sterilised is likely to exert a great influence on the audience. Filming will have to be done rather carefully and might include some interviews with the vasectomised persons, doctors, nurses, etc. The interviews might again cover points like the initial resistance the clients had before they offered themselves for the operation, who influenced them, the advantages to which the influences had pointed out, the ease with which the client underwent the operation, etc.

Agency programme

Family planning clinics and programmes are also being organised by several voluntary agencies in India. Such programmes may also be filmed and screened to indicate to the public the large scale on which the programmes are going on. Voluntary organisations doing this kind of service-oriented work offer scope to the people to evaluate the work in positive terms.

Programmes arranged by and the role played by schools, business and industrial organisations, labour unions, religious organisations, political and social organisations are likely to have good impact.

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POPULATION AWARENESS AMONG SCHOOL STUDENTS, TEACHERS AND PARENTS IN GOA

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Of the many challenges which mankind has to face today, the most significant and the most menacing is the problem of a rapidly growing population. The countries of the world today, may be divided in respect of population, into two blocks: the developed and the developing. The unbalanced growth of population in the latter countries poses before the world many economic and social problems. If education is to have a real meaning in the life of the individual, then the children of today who will, in the near future, shoulder the responsibilities of parenthood should be given a complete idea of the realities of the environmental situation in which they are growing up. The population problem is one such reality. Thus, it devolves upon the schools, the delicate task of inculcating in the minds of the young ones a predilection for limited numbers—a liking for small families. Hence the need for population education as an integral part of the school curriculum.

Aim and general objectives

The study of population awareness among the major components of the educational process, namely, the school students, school teachers, and parents becomes, therefore, a necessary prerequisite to the inclusion of population education in the school system.

With this intention in mind the author tried to investigate the degree of population awareness among school students in Goa (Stds. VII-XI) as well as among school teachers and parents so that the necessary ground-work concerning the introduction of population education in Goan schools be completed. The study, therefore, partakes the nature of three different surveys. This paper presents only the main points of these three surveys.

The broad objectives of the study were: (i) To assess the degree of population awareness among the Goan school students entering adolescence, Goan high and middle school teachers, and parents, (ii) To find out their preparedness for the inclusion of population education in the school programme, (iii) To understand their views regarding the ways and means of introducing population education in the school system (Stds. VII-XI).

Questionnaires

The three questionnaires were, therefore, drafted with the intention of implementing the above objectives. The final questionnaire for students was prepared after having administered a trial questionnaire to a selected group of students of Stds. VII-XI. The questionnaire devised for teachers was more or less modelled on that produced by the International Institute for Population Studies, Bombay, which had conducted a similar survey of teachers at Chembur in 1969. The questionnaire meant for parents was drafted keeping in view the diversity in the educational and social backgrounds of the parents in Goa.

The students' questionnaire could be conveniently divided into six parts in order to ascertain their knowledge about: (i) population facts, (ii) socio-economic factors affecting them in their day-to-day lives, (iii) factors leading to declining mortality and child deaths, (iv) causes of increasing and decreasing births, (v) size of the family, and (vi) the mode of introduction of population education into the school system.

The teachers' questionnaire consisted of 24 items divided into three parts: (i) institutional data with three items, (ii) bio-social data with ten items, and (iii) opinion data with eleven times which were meant to elicit their awareness about the population problems in the country, the size of the family, sex education and the inclusion of population education into the school curriculum and its course contents.

Similarly, the parents were administered a questionnaire which consisted of (i) bio-social data with eight items, and (ii) opinion data with eleven items with the objective of drawing more or less the same information as in the case of teachers, but, without the items concerning the drawing up of course contents for a population education programme in schools.

Selection of the sample

Out of the three surveys, the major survey involved the students' opinions on population issues and population education. The students' sample consisted of 2,183 students of Stds. VII-XI who formed about 5% of the total school population of Goa district in these classes in 1971-72. The 30 schools in which the questionnaire was administered were chosen by the random sampling technique from all the 11 talukas of the district. Of the 2,183 students, 1,300 were males and 883 were females.

Standard VII was selected as the initial class for the survey because the students enter Std. VII at about the age of 12 + which is the beginning of adolescence, at which age their actions are more thoughtful than in the earlier years of their lives.

The samples of teachers and parents were comparatively smaller consisting of 400 teachers and 200 parents. This was mainly because these surveys were subsidiary to the main students' survey. The 400 teachers from the middle and high schools formed about 15 per cent of the total number of teachers teaching in middle and high schools of 11 talukas of Goa district in 1970-71. Similarly, the 200 parents represented persons from different walks of life and belonging to different social and economic strata.

Findings

The analysis of the data collected leads one to the following broad conclusions:

(1) The students of Stds. VII-XI of Goa district, Goan teachers and parents are well aware of the population problem of the country. This has been revealed by the fact that 70 per cent of the students, 95 per cent of the teachers and 96 per cent of the parents do realise this fact.

(2) Similarly, they are equally aware of the consequences of an abnormal population growth in the country. The percentages on this account are over 75 per cent. Scarcity of food, shelter, clothing and over-crowding of schools and hospitals is attributed by students to our enormous population. The teachers and parents interpret these facts in terms of unemployment, shortages and poverty.

(3) More than 80 per cent of teachers and parents feel that school children must be made aware of the population problems of the country.

(4) Goan students in general are not well conversant with the causes that have led to a decline in child mortality and the death rate in the country. On the other hand, they are conscious of the influence of early marriages (74.3%) and of the family planning programme (67.2%) on the birth rate. About 85.5% of the parents too, were aware of the government family planning programme.

(5) Goan students and parents believe in the small family ideal. The percentages in this regard are as high as 86.1 per cent and 92.0 per cent respectively.

(6) About 54.5 per cent of the parents and a large majority (62.7%) of the teachers knew of the suggestion made by educationists and social scientists regarding the introduction of population education in the school system.

(7) The three main participants in the educational process,

namely, the students (73.4%), teachers (73%), and parents (79%) are willing to have the subject of "population" introduced in the school curriculum.

(8) About 50 per cent of the students and 67.6 per cent of teachers wanted population education to be integrated with other subjects. Similarly, 54.4 per cent of the teachers feel that the subject may be taught from Stds. VIII or IX onwards.

(9) Sixty-one per cent of the teachers and 54.5 per cent of the parents interviewed were not in favour of holding separate classes for boys and girls to impart population education. However, teachers in Goa (63.8%) and parents (49.0%) are not equally enthusiastic about teaching population education along with sex education.

(10) Fifty-eight per cent of the teachers and 60 per cent of the parents thought school teachers to be the best agents for imparting population education.

Summary of the recommendations

Population education may be introduced in schools in Goa from Std. VIII onwards. The content would be integrated with other subjects and be taught by the subject teachers who would, at first, themselves receive some special training in the subject. The programme could be implemented as follows:

(i) Before introducing the subject in the schools, a proper climate should be created. The Education Department of Goa, school managements and the headmasters of the schools are mainly responsible for the generation of an adequate atmosphere in the schools. The students should be motivated through an attractive curriculum and well trained teachers. The school managements should be oriented to the new concept and the headmasters trained by a "nuclear group", established by the Education Department of Goa with the help of N.C.E.R.T. experts.

(ii) Population education should be introduced through an incremental-cum-sequential pattern. The Education Department of Goa should introduce the programme on a pilot basis in a few selected schools. The curricular reframing which the introduction of population education by an integrated approach may need, would be dealt with by the Education Department in the case of primary and middle schools, and by the proposed S.S.C. Examination Board of Goa, at the secondary level.

(iii) The preparation of teachers for the new task of teaching population education should be done during their pre-service training and in-service programmes. The State Institute of Education which may be set up very soon in Goa may undertake the in-service programme and a Population Education Centre may also be established in it. The proposed Goa University may introduce Population Education as an optional subject for graduation and at the M.Ed. level.

(iv) Readymade instructional materials such as text books, reference books and audio-visual aids should be made available to the teachers. Initially, this should be supplied by the N.C.E.R.T. Every school library should have a section of books on Population Education. The State Institute of Education to be set up in Goa may have a special section of books spread over the entire field of population.

(v) Motivation of rural parents should be emphasised by educating them through Parent-Teacher Associations, Adult Education Centres, Social Welfare Agencies and Village Panchayats.

Population education is a rather new idea, and in view of the present situation in our country, it is an urgent educational and social need. Therefore, the programme should be implemented without any delay not only in the schools in Goa but in every school in the country.

THE ROLE OF WOMEN IN A CHANGING SOCIETY*

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Women in National Development

The efforts of the Bharateeya Grameen Mahila Sangh and the Home Science College need to be congratulated for celebrating the International Women's Year 1975 by organising a seminar to emphasize the role of women in a changing society. The main objective of declaring this year as an International Women's Year by the United Nations is to encourage efforts by member nations to promote equality among men and women, to ensure full integration of women in all developmental efforts and to organise the importance of the contribution of women towards the strengthening of world peace. The United Nations has already released guidelines to member nations for an action programme. Governments and non-governmental organisations will plan strategies and programmes of action for this year. At the national level the Government is preparing plans as to how best it could focus public attention on the potentialities of women. This will be a proper time to examine what we have been doing in this yeaer and to plan out a systematic programme to achieve results towards the objective of celebrating International Women's Year

Complacency

It is rather discouraging that despite several campaigns made to achieve equality between men and women, in some of the most advanced countries the participation of women at the decision making level is, even today, extremely poor Several measures have been taken to give opportunities to women in the field of education, employment and political life, still there is a long way to go to enable women to share equality in the benefits of the developmental process and in bringing about a higher standard of living. In spite of all the legal measures taken and the sincere efforts of our reformers more than 80 per cent of our women are still illiterate; female literacy stands at 18.45 per cent with a mere one per cent going to college. For equality to be made a reality and to bring women into the mainstream of national activities, literacy would be an important step.

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* Speech given at the Home Science College on Thursday the 6th February, 1975 to celebrate the International Women's Year in collaboration with the Bharateeya Grameen Mahila Sangh, on February 6, 1975

National Development

The topic assigned to me is rather broad. When one thinks in terms of national development, areas of economic and industrial development, gross national product, income per capita, national savings and the like usually receive prominence. Instead of examining these aspects which in themselves are significant, I would like to lay stress on the human factor which to me is crucial in any kind of development. To step up national development what is needed most is improving and developing the human element, to do which, programmes on education, literacy and socio-economic development need to be stressed. When we consider the human input for the progress of national development, we find that one of the major problems we face is the rapid increase in population. This problem indeed absorbs most of the advances made towards national development. Instead of talking about the other aspects of national development which would be covered by the speakers who will follow, I think it extremely necessary to examine the role that women can play in helping to relieve this tremendous and most immediate problem that faces our country.

Population Problem

Despite the progress the country has made in economic development the rapid increase in population has made it difficult to see the effect of the different measures adopted in the Five-Year Plans. The population problem has become acute because of a sharp increase in the family size in recent years, which is due to a sharp decline in the death rate. Life expectancy has gone up from 22.9 years in 1901 to 52.6 in 1970 while the death rate has dropped from 40 to 14 per 1,000. The present growth rate of the population is 2.5 per cent per annum which means an addition of 13 million people per year. The Planning Commission had previously projected the population of 1981 to be 529 million but we have gone far beyond this figure much before that according to the 1971 census.

Social Traditions

One of the strong barriers which accelerates the population problem is the firm social traditions planted in our rural families. We believe in the tradition of supporting many children, particularly sons, and consider procreation a sacred duty which has the sanction of God. Even today in the majority of families, children are considered a gift of God. There are moral and social obligations to marry early and procreate till late and bear many sons. Women can play a very important role in changing tradition and attitudes. One of the most effective methods of reducing the rapid increase in population is to develop a moral attitude to marry late and procreate sparsely as far as possible. If women can be educated to stop bearing children early irrespective of having sons or not, this will have a significant effect on national development. For national development we need an urgent reversal of attitudes towards procreation which to a large extent can be influenced by women.

Unemployment Problem

The unemployment problem is also getting intensified because of the high increase in population. Agriculture and industry are not able to accommodate the employment backlog. In 1951-52, the unemployment backlog was 3.5 million and in 1965 in spite of 31 million additional jobs created, unemployment rose to 10 million. This does not include the agricultural under employment of 15 per cent. Since independence, food production has increased by 70 per cent, industrial development by 150 per cent and educational facilities by some 300 per cent. Despite these increases, there are still 15 to 20 million unemployed persons while 65 million children of the school-going age do not go to school. The "green revolution" has made a tremendous change in our food production, but in spite of this the per capita food production has tended to decrease. There is an acute shortage of several million houses. To add to these problems, it is estimated that the population of our country at the present rate of growth, will be doubled in the next 28 years or so.

National Investment of Children

India has two-fifths or 40 per cent of her population below 15 years of age in contrast to one-third of the population in countries such as Japan, Canada and the U.S.A. Children, until they are 15 years old, do not contribute to national development, that is on the production side. On the contrary, this high deficiency structure affects national investment. Schools, play grounds, dispensaries, etc., are needed to keep children alive and literate. Due to the large number of children, very few of them get more than what they need to survive. This national investment swallows up whatever gain there is in national development. The nation's resources will have to be directed towards better nutrition, better housing, better schools, better hospitals and better play grounds, to provide facilities for the children who are already born. We should not aim at only the survival of children but we should provide them with the environment and facilities for greater physical stamina and higher intellectual quality.

We have to ensure that the attention given to them will help them to work hard in fields, factories and offices for national development. For this we will have to divert our resources to the construction of tube-wells, steel plants, better seeds and fertilisers, etc., to break the vicious circle.

Family Planning

With the millions of illiterate people in India, it becomes imperative to provide knowledge to the couples in the reproductive age group regarding the need for fewer babies so that fewer people would enter the reproductive age group tomorrow. There is need for educating those who are illiterate and who are bound by custom and tradition on the necessity to start a process of slowing down the population growth which would, in the long run, be a message of hope. We will have to explain the vicious circle and convince persons in the reproductive ages, even if they are illiterate, that excessive and rapid population growth is virtually the most important factor that retards national development. It becomes the task of all of us, and more specially of women who can carry the message more effectively, to make individuals understand that it is in their hands to save the nation by adopting a route to plenty and prosperity for all.

Emancipation of Women

In this International Year for Women the cry for emancipation in real terms is the emancipation of women from the tragedy of child-bearing which includes many other problems that result in lack of freedom and independence. It is this emancipation that can create a better scope for companionship on an equal basis between man and wife. The problem of limiting one's family is still a new way of life in our country. Despite the fact that India is a pioneer in making family planning a national programme, the number of acceptors is a mere drop in the ocean. As a result of the consistent and intensive Government policy, the number of sterilised persons in India (nearly 12 to 14 millions) is the highest as compared to any other country. However, this movement being new to the Indian social system has not been moving with the same speed and direction because of social practices and social traditions. One of the greatest fear of the parents is that a high population of their children will die and consequently, they prefer to have a large number of children so that at least a few may survive. Another reason for the slow progress of this movement is the low status of women—their inability to communicate their desire to use contraceptives to their husbands. On the other hand, again, social tradition creates the desire to have as many children as possible to enhance the status of the "mother" in Indian society. It is believed that a son is essential for the family so that the funeral rights can be performed. This becomes another social barrier to family planning and in many cases, the number of children in the family keep increasing in the hope of having more sons.

Incentives

Of the total 547 million people, there are 110 million couples in the reproductive age group and we still have to reach 90 million couples and convince them of the need for family planning. To encourage families to accept contraceptives, incentives in cash were offered. This seems rather contradictory because families themselves should practise family planning as it is in their best interest. One of the basic reasons for rural families to insist on a large family is the fear of the survival of their existing children. If this fear is removed by convincing the mothers that through good child care they can ensure their children's survival, there is a greater likelihood of their limiting their families. That child care is a more genuine incentive has been proved to a small extent in the efforts made by the Indo-Dutch Project for Child Welfare. In the Chevella block of Hyderabad district at the Primary Health Centre, Shankerpalli, the experiment of intensive care for mother and child has indirectly convinced the mothers that their existing children will survive. As a result 212 mothers spontaneously came forward for sterilisation in one year. With education and with the right incentive this movement can gain momentum in rural areas.

Womens' Role

Education and motivation seem to be the most effective methods for convincing people of the need for using family planning techniques. Several attempts have been made in the past to use mass media specially to reach those who are illiterate. Pictures, slogans and the red triangle have become symbols of recognition throughout the country. We have succeeded in creating an awareness among the population. The mass media programme has reached every village. Today it is said that roughly 86 per cent of our population is aware of the need for limiting one's family, but acceptance has been limited to only 14 to 15 per cent. There is a wide gap between acceptance and awareness which cannot be removed through mass media alone. What is more important is personal communication through laymen, neighbours, local leaders, etc. A face to face contact with the right message given by a person who has the conviction and dedication, will be the most effective method to make people realise the importance and the significance of the problem.

In 1975, which is International Women's Year the role of women could be to use ways and means to bring about a change in the attitude towards social barriers. Efforts should be made to educate women to remove the wrong concept that more children will increase the status of the mother. Parents should be influenced to accept that early marriages should be postponed and that the desire for sons is not so significant when compared to bearing the burden of a large family. There is a need for a general social education to create new social values—social values that do not have any economic basis. Emphasis should be laid on a small family norm. The policy of the Government could be explained in further detail that parents are given the freedom to decide the number of children they want to have, that there is no force, coercion or compulsion for couples to use family planning techniques but it should be their own conviction and knowledge which should act more effectively than the impact of force.

AN EDUCATIONAL APPROACH TO THE PROBLEM OF VENEREAL DISEASES

by

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"The world is in the grip of a virtual epidemic of venereal disease." This is not just a sensational news item, but a statement of facts bearing the authority and seal of the World Health Organisation comprised of 136 member-nations. The W.H.O. reports that three to five among every thousand persons are affected by venereal diseases (V D.). Of an estimated 200 million V.D. patients in the world, we in India, have our fair share of 20 million.[1]

It is not only the incidence, but the increase itself that is quite alarming. W.H.O. estimates the rate of increase at 8 to 10 per cent every year. In Bombay, which has gained notoriety as one "among the ten worst V. D. infected cities in the world", the number of cases have doubled in the past five years and it is feared that it will double further in the next two years.[2]

Another poignant fact to be reckoned with is that this epidemic is entangling more and more of the younger generation, thereby jeopardising the health of the future citizens of the country. Our studies in Trivandrum have shown that nearly half the patients with the disease are in the 15-25 age group.[3] Similar findings have been reported from surveys in Poona and Bombay.[1]

What can we do about this alarming state of affairs ? My submission is that we can control this by a new strategy of programmed health education aimed at instilling into the minds of the people the importance of maintaining 'positive venereal health', by healthful activities in the realm of Venus, the goddess of sex or love.

V.D.—a social disease

The reservoir of infection of venereal diseases is the social animal-man. The mode of spread depends on his social behaviour. Prostitution and sexual promiscuity are the twin social malaises around which revolve other factors for the origin and perpetuation of this disease. The obvious solution then, is to control prostitution and promiscuity. From time immemorial, individuals, communities and national and international agencies have tried to put the world's oldest profession —prostitution, out of business. None has succeeded. I have no hope, we are going to do any better by any direct action. The best we can do may be to change the attitude of the community to prostitution by proper education.

What about sexual promiscuity ? I feel that something worthwhile can be done by way of controlling this by a programmed educational approach aimed at changing the individual's attitude to sex and enlightening the public on matters of sex and venereal diseases.

Sexual activity is a personal affair It is intimately associated with an individual's personality, and his attitudes to life and society. Indiscriminate sexual activity and sexual deviations are reflections of childhood training and parental attitudes. The deviant in sexual behaviour is made, and not born. Our own studies and those of others have shown that sexual habits acquired early in life are difficult to change. Amongst V D patients we found that the promiscuous male continued to be promiscuous in spite of a happy married life and that a disciplined upbringing had a deterrent effect on promiscuity.[3]

Sexual behaviour, morality and religion

Sexual behaviour is closely linked with morality. It is often heard in medical discussions that morality has nothing to do with doctoring. It would indeed be strange for a practitioner of preventive medicine to disregard moral standards in promoting positive venereal health. Religion has played a significant role in the past in maintaining moral standards. The universal religious tenet of "chastity before marriage and fidelity within it" has been a great deterrent to promiscuous behaviour. Our own observations and those of others have shown that religious faith sincerely held had a deterrent effect on promiscuous behaviour.[3,4,5.] Whatever be the role of religion in maintaining venereal health, it seems that at least one of the reasons for the present dilemma in sexual behaviour, is that in rejecting religious faith, the majority of people have also rejected the standards of behaviour which religious organisations strived to maintain.

Importance of early education

It is not possible to make people moral by preaching or by an act of parliament This could be achieved only through education in its widest sense, aimed at rousing the conscience of the individual right from the beginning. So, for developing the right attitudes, the parents must be reached before they have children and the children must be reached before they go to school.

The question of sex education in school is beclouded by emotionally charged, conflicting and contradictory attitudes to sex in society at large. One of the mistaken ideas commonly held is that sex education should be given only to grown ups. Nothing could be more wrong. If the objective of sex education is to develop in the growing minds, an attitude to maintain positive venereal health, this has to be introduced in the nursery classes and primary schools. Attitudes to life and society are moulded in the early formative years of life. This does not mean that reproductive physiology or V. D. should be taught in the nursery classes. Children can be initiated into the important subject of family life from early infancy For example, the puranic parable of Kuchela or Sudama can be told to introduce the idea of how uncontrolled procreation can result in a miserable family life.

As the child grows up, the biology of reproduction may be introduced into the school curriculum. Along with this, the concept of sex hygiene should be introduced, followed by lessons on family planning and venereal diseases. Mere factual information alone would not result in virtuous behaviour. Development of character and self-restraint are all important. So, this is the ideal time to introduce the larger question of morality. Sexual intercourse should not be pictured as occuring in a vacuum. It should be put in its proper perspective in the broad field of human relationships. The teachers should seek to introduce an ethical content into human sexual activity. The brazenly exploitative attitude of the adults and adolescents should be deprecated. Positive humanistic ethical standards should be set up. That is, everyone should learn to behave in a responsible way with others, with dignity, compassion and honesty. The legacy of such an ethical code of behaviour, when widely applied, is bound to reduce the unwanted consequences of sexual behaviour at all age levels.

Though health education at school is one of the most important means of building up a healthy attitude to sex in society, the fact remains that a large number of children in India do not go to school and reach adolescence and adulthood without any knowledge about sex and venereal diseases. For this group, the educational effort should be to provide full and accurate information about sex and venereal disease in terms understandable to everyone. The language used should be simple, but not demeaning and the presentation non-judgemental. Such a presentation of "facts of V. D." is appended at the end of this paper.

The role of the mass media

The traditional approach of health education, restricting it to the distribution of pamphlets and notices, has often failed to reach the sexually active population. We should use every possible media so that education on sex and V. D. should invade the farm, the factory, the office and the home.

Amongst the various mass media in use in our country, the cinema is perhaps the most powerful, and wields the greatest influence on education and culture. This medium has been used most effectively in lowering public taste and creating romantic illusions and titillating thrills, standardising a whole series of false sexual values and inane conventions where virginity is obsolete and chastity outmoded.

This potent medium can be utilised very effectively for creating public opinion in the right direction. Some enlightened producers may be persuaded to make films to depict the varied aspects of sex and venereal disease in its proper perspective. Three types of films may be made for this. One, a lurid film to show the disastrous effect of venereal diseases on the individual, his family and society. A second, portraying the devastating effects of illegitimacy on the mother and child, and a third, to show what marriage really means: highlighting the proper values of interpersonal reactions in marriage, rather than depicting it as an arena for music and dancing with a license for sex.

Another important medium to be exploited concerns that of popular personalities, the idols of the youth: the famous film stars, the favourite sportsmen and the popular models. The advertising industry has shown the great impact these figures have on the youth of the country. If we can persuade these celebrities to inveigh against some kind of human behaviour, their admirers will promptly follow suit. On the other hand, our experience in the past with such problems as smoking, alcoholism and drug abuse have shown that neither hard facts nor venerated personalities have had any major impact on their control. We should exploit all possible mass media like the cinema, celebrities, radio, T. V. and the press for maximum dessemination of factual knowledge about venereal diseases and build up a climate for positive venereal health.

The problem group of women with V. D.

The next problem group to be tackled is the vast reservoir of infection that remains undetected in the female population of our country. Hospital statistics show that the proportion of women who attend V. D. Clinics is very small. In Trivendrum, the proportion is as 30 women to every 400 men.[3] This shows that a large reservoir of infection in women remain undetected in the community at large.

This is because early signs of V. D. like ulcers and discharge from the genitalia are relatively symptomless in the female who consequently do not seek medical help. To reach this important section of the population, we have to evolve some special strategy.

One way of reaching them is by case detection surveys and education through various health service clinics. In a survey conducted by us to detect syphilis in various hospital populations, we found a very high percentage (9%) of syphilis in patients attending a family planning clinic.[6] Most of these patients belonged to the illiterate, low socio-economic stratum of society. Public education on family planning methods seems to have been successful in reaching this social stratum, but they seem to be ignorant of the associated risk of venereal disease from indiscriminate sexual indulgence. So, if we combine the educational and clinical services for family planning with those of venereal disease, an efficient and economic way of controlling the two unwanted outcomes of sexual relations: pregnancy and venereal disease.

The best way to tackle this problem group is to establish integrated family welfare centres, where maternity and child welfare are combined with family planning and venereal disease services. These places can act as centres for education, detection, diagnosis and treatment of the disease. These integrated centres could also be used for imparting training to medical workers and health educators on a comprehensive programmed approach to the problem of venereal diseases

Summary

1. A comprehensive educational programme starting from the nursery classes—aimed at inculcating in the mind of the growing child the importance of maintaining "Positive Venereal Health".
2. Exploitation of all possible media to disseminate factual knowledge on sex and venereal diseases and to promote a climate conducive to better venereal health
3. Establishing integrated Family Welfare Centres for family planning, maternity and child health and V. D. services, which can act as centres for education, detection and treatment of the vast hidden reservoir of venereal disease in the female population.

APPENDIX

Facts about V.D.

V. D. is spread through sexual contact.

The early signs of V. D. are:

Ulcers of the genitalia.
Pus formation in the genitalia.
Swellings in the groin. Sometimes there may not be any signs.

If you have run the risk of getting V.D., consult a qualified doctor.
If you have V.D. get your partner medically examined.

V.D. if treated in the early stages can be cured completely.
Quack medicines and self-medication are dangerous. Untreated and improperly treated V.D. can cause serious damage to the vital organs—even death.

A person can get V.D. over and over again.

Include a V.D. check in your routine medical check-up.

Before marriage, both men and women must have a V.D. check-up.

A pregnant mother should have a V.D. check at each pregnancy.

V.D. can be transmitted by the mother to her child and result in deformity or death of the baby. But, if treated early the child will not be infected.

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NEWS & NOTES

PROSTAGLANDINS vs. HYPERTONIC SALINE

The mechanism of abortion may not be much different for prostaglandins and hypertonic saline, though a comparatively study of larger groups of patients is necessary before deciding which method is safer, is the finding of a small study conducted by a group of researchers in New York (*American Journal of Obstetrics and Gynaecology,* Vol. 120, No. 7, December 1974).

The researchers induced abortion in two compatible groups of patients in the second trimester by intra-amniotic instillation of either prostaglandin F2α or a 20% sodium chloride solution. Nine of the ten patients in the prostaglandin group aborted completely with a mean abortion time of 15.16 hours and in the one who failed to abort during the prostaglandin instillation, the abortion had to be completed surgically. All the ten patients in the saline group aborted completely within an average of 20.34 hours.

The endocrine changes and side-effects were more or less similar in both groups of patients though gastro-intestinal symptoms were more frequent in the prostaglandin group. Lactation in the post-abortion period was also more frequent in this group.

HYSTEROSCOPIC STERILISATION REGISTRY

A collaborative data-sharing programme on hysteroscopic sterilisation procedures has been established at the College of Physicians and Surgeons of Colombia University, under the auspices of the Programme for Applied Research on Fertility Regulation. Preliminary data indicates that certain clinical sequelae are sufficiently serious to warrant bringing them to the attention of investigators and other persons who might be using this technique.

The most serious complications have been a number of small bowel perforations with peritonitis. Other complications include late recanalisations and cornual ectopic pregnancies which appear to be occurring in numbers far greater than would be expected by chance.

Hysteroscopic Sterilisation Registry has been established to monitor closure rates and clinical sequelae. Currently, available data is being gathered, and will be complied for publication in the near future. The Director of the Registry would welcome and encourage any physicians or groups who have performed hysteroscopic sterilisation procedures to contact him at the following address: Ralph M. Richart, M.D., Director, Hysteroscopic Sterilisation Registry, College of Physicians and Surgeons, Colombia University, 630 West, 168th Street, New York 10032.

WORLD SITUATION ON ABORTION

About 7 per cent of the world's population live in countries where abortion is prohibited without exception; 12 per cent in countries where abortion is permitted only to save the life of the pregnant woman, 15 per cent live under statutes authorising abortion on broader medical grounds to avert a threat to the woman's health, social factors justify termination of pregnancy among 22 per cent of the world's population, while 36 per cent are allowed elective abortion.

Countries where abortion is illegal without exception

Barbados, Belgium, Bolivia, Columbia, Dominican Republic, Guyana, Haiti, Hong Kong, Indonesia, Ireland, Jamaica, Panama, the Philippines, Portugal, Taiwan, Trinidad and Tobago, Republic of Vietnam.

Countries where abortion is legal to preserve the life of the pregnant woman only

Algeria, Bangladesh, Chile, Egypt, France, Gautemala, Iran, Iraq, Ivory Coast, Khmer Republic, Kuwait, Liberia, Luxembourg, Malaysia, Netherlands, New Zealand, Nicaragua, Nigeria, Pakistan, Paraguary, Senegal, South Africa, Spain, Venezela.

Countries where abortion is legal on extended grounds, medical, eugenic, juridical and social elective

Argentina, Australia (South Australia), Austria, Brazil, Bulgaria, Cameroon, Canada, China, (People's Republic), Costa Rica, Cuba, Cyprus, Czechoslovakia, Denmark, Ecuador, Ethiopia, Finland, Germany (both G.D.R and F.D.R.), Greece, Honduras, Hungary, Iceland, India, Israel, Italy, Japan, Jordan, Kenya, Korea (Republic of), Lebanon, Mauritius, Mexico, Morocco, Norway, Peru, Poland, Romania, Sierra Leone, Singapore, Sudan, Sweden, Switzerland, Syria, Thailand, Tunisia, Turkey, Uganda, USSR, United Kingdom, United States, Uruguay, Vietnam (Democratic Republic), Yugoslavia and Zambia.

(The above information is as per the situation in 1973-74 in the countries mentioned.)

BOOK REVIEW

VASECTOMY & STERILIZATION : A GUIDE FOR MEN & WOMEN,
by Dr. Clive Wood ;
Publishers : Maurice Temple Smith Ltd., London ; pp. 158 ;
Price : £1.00.

Vasectomy & Sterilization—A Guide for Men & Women is a very readable book. Obviously, Clive Wood has taken pains to ensure that the contents and language hold the reader's interest. His views on sterilization are balanced and he has given sufficient description to allay any fears of the operation—either male or female. Both medical and paramedical personnel will benefit from reading this book as it provides an insight into the sort of questions and problems that worry those who seek sterilization. Perhaps the mentioning of unasked questions that embarrass potential acceptors will remove one of the greatest barriers to the acceptance of sterilization.

Dr. M. C. Watsa

THE FAMILY PLANNING ASSOCIATION OF INDIA

(Registered Under the Societies' Registration Act, 1860)

AIMS AND OBJECTS

1. To disseminate knowledge and education about, and to promote the adoption of, the practice of family planning for the advancement of basic human rights, family and community welfare, the achievement of a balance between the population and its resources and productivity, and the attainment of a higher standard and quality of life.
2. To assist wherever possible in the national programme of family planning by undertaking to carry out various activities of a complementary, supplementary or innovative nature.
3. To study and formulate policies and programmes regarding the provision of measures for family planning, population control and allied subjects, and place its considered views and advice before Government and other agencies whenever appropriate.
4. To undertake or promote studies and activities in regard to services, training, education and research programmes covering the demographic, sociological, economic, medical and other relevant aspects of human fertility and its regulation, including methods of contraception, sterility, and sub-fertility, sex and family life education, marriage counselling, population education and human ecology.
5. To collect information and statistics and to organise conferences, seminars, training courses and other meetings, whether local, national or international, in the furtherance of the Aims and Objects of the Association.
6. To establish Branches and other units for the promotion of the Aims and Objects herein.
7. To foster and develop contacts with other organisations engaged in similar types of work in India and abroad.

Clauses 8 to 18 deal with administrative and financial subjects.

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ATTITUDES AFFECTING FAMILY PLANNING BEHAVIOUR AMONG VILLAGERS IN THE KATHMANDU VALLEY OF NEPAL

DR. MARK POFFENBERGER
and
DR. MARY FURBUCHEN
(*Ann Arbour, Michigan, U.S.A.*)

The purpose of the survey was to pre-test a questionnaire which was designed to study villagers' attitudes towards the family planning programme. It was hypothesized that one of the most effective ways to study the progress and problems of the family planning programme was to ask villagers, especially those who had come into contact with it, what experience and attitudes they had towards it. Topics on which attitudes were tested included the family planning concept, family planning staff (doctors, nurses, volunteers), follow-up services, and specific family planning methods.

The area from which the sample was taken had experienced one of the most intensive family planning programme efforts of any area in the country. Situated in the Kathmandu Valley, where the bulk of Nepal's family planning work is carried out, the sample area is only three miles from a government maternal and child health/family planning centre from where family planning workers make home visits. Four miles away in the opposite direction lies Kathmandu, in which government and private family planning clinics have been offering family planning methods for the past *eight years*. For five months leading up to the commencement of interviewing a full-time family planning worker had been making home visits in the area. While the sample does not represent the villagers of the Kathmandu Valley in general, the attitudes of the sample groups are significant for a number of reasons. First, because of their proximity to Kathmandu, they have been exposed to the innovations and new values generated from the capital, as an increasing number of Nepalis will be in the future. Secondly, to the degree that the sample is representative of its peers in Nepal, considering its comparatively intensive contact with the Nepal family planning programmes, it may be able to indicate attitudes towards family planning that will develop among other Nepalis as they come into contact with family planning efforts in future.

Method

The sample was taken from the wards of three village panchayats in the Kathmandu Valley. The respondents were selected from a priority couple survey conducted by a family planning worker in the area. The interviewer was an older, highly respected community leader in the area where the survey was conducted and although he had started working in the area as a family planning worker, the respondents did not seem to associate him with any particular family planning programme, and therefore were willing to discuss their negative, as well as positive attitudes towards family planning. Each respondent was interviewed in private. Although the interview schedule consisted of 24 questions, each session took from one to two hours to conduct. The fourteen questions pertaining to family planning and related topics were open ended and required the interviewer to make numerous probes. The oral interviews were written up immediately following the interview. The sample included 41 respondents (28 males and 13 females).

Background characteristics of the sample

The average age of the respondents was 36.1 years, while 74 per cent of the respondents were 26 to 45 years old. All of the respondents were married, with 32 per cent being women and 68 per cent men. The respondents had an average of 3.6 children of which 2.2 were sons. Five cultural groups were represented in the sample. Twenty-three per cent of the sample were Tamangs, 14 per cent Newars, 36 per cent Brahmins, 20 per cent Chhetris, and 7 per cent Sheduled castes.

Thirty-six per cent of the respondents were illiterate, while 49 per cent were literate but had no formal education. Ten per cent of the sample were high school graduates and one of the respondents had studied in a university. Sixty-three per cent of the sample were engaged in agriculture as a primary occupation. Twenty per cent held such service jobs as government clerks, police officers, bus drivers, etc. Seventy-three per cent of the respondents owned some farm land.

Attitudes towards family size

No specific questions were asked regarding what family size would be ideal for the respondent, as the validity of such responses are being questioned in the literature. Rather, an attempt was made to determine the goals a villager could achieve by having a large or small family. To this, Bogue's* four questions concerning the advantages and disadvantages of large and small families were used. The responses to these questions were analysed in two ways. First by counting the number of favourable and unfavourable comments made regarding small and large families, a comparison was made between the average number of high and low fertility responses made by the goals that could be achieved by having a large or small family.

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* Bogue, Donald J. : *Family Planning Improvement Through Evaluation*, Chicago, Community and Family Study Centre, 1970.

Low fertility attitudes

Ninety per cent of the respondents stated that it costs less to raise a small family. Furthermore, 63 per cent of the sample reported that they could raise a small family in a better way, giving their children better food, clothes and education. One Tamang tenant-farmer stated that: "If I had two children instead of what I have now (6 children) I could have raised them with what I grow in my field. They'd have gone to school as other boys instead of running around the street and playing with the dust." (case 14)

A Brahmin farmer's statement regarding the advantages of a small family is typical of many of the respondents' attitudes: "Two children are good in a family. The advantages are: it is easier to raise a small family than a big one. We can afford to give them good food, clothes and a better education". (case 28)

Thirty-two per cent of the total sample and 52 per cent of the women sampled stated that women would remain healthier by having a small family. However, the most frequently expressed advantage (90% of the sample) of having a small family was that the children could acquire a better education. For example, one Chhetri stated: "The biggest advantage of two children is that we can give them a fairly good education, because education is the need of the time". (case 35)

Another man stated: "You know the regular public schools (low tution schools) are of no use. These schools just exist, but actually they are good for nothing. But if we have only two children we can send them to private schools."

The value placed on acquiring a good education (especially in a private, English medium, high tution school) for one's children was found to be widespread among all groups sampled. The villagers seemed to feel a great deal of social pressure to raise their children in a "proper way" and education seemed to be one of the most important and certainly most expensive aspects of child rearing. The costs of education included not only tution fees, but expenses for uniforms, books, papers, pencils, pocket money, etc. Furthermore, many parents stated that by sending their children to school, it was difficult to get them to help with the farm and housework. Thus,

TABLE 1

Low fertility attitudes of respondents

Advantages of a small family	Rampur* %	Baudha %	No.
Economic			
Easier to meet basic costs	64	90	37
Can spend more on children	14	63	26
Avoid dividing land and health	5.5	13	5
Fewer marriage and ceremonial costs	5.5	2	1
Health			
Physical problems of pregnancy	9	32	13
Less work for mother	22	13	5
Better care given to children	29	65	27
Family welfare			
Happier family life	34	30	12
Individual welfare			
More freedom for mother	4.5	2	1
Educational opportunities	15.5	90	37
Occupational opportunities	1	10	4
Community welfare			
Avoid over population	18	2	1
Average number of low fertility responses	2.7	4.1	
Average number of high fertility responses	1.6	2.1	

* Results regarding the relative advantages and disadvantages which the sample found in large and small family sizes have been compared to a similar study conducted in Rampur, Gujarat in 1966 Poffenberger, Thomas, *Husband-Wife Communication and Motivational Aspects of Population Control in an Indian Village*, New Delhi, Central Family Planning Institute Monograph Series 10, 1969.

in recent years (especially since 1951 when primary education become more widely available in the Kathmandu Valley) the cost of raising children has risen considerably. (Table 1).

High fertility variables

Over half of the respondents found two related advantages in having a large family. The first was that by having a large family parents are assured that some of their children will survive (63%), and thus they are more certain of having economic security in their old age (56%), (Table 2).

For example, one woman replied when asked about the disadvantages of a small family, that: "The only thing is that they may be taken away by God" and said that the advantage of having five children was that: "They can help us in our future life (old age), but it is hard to take care of them. If we have grown up sons and in-laws, it would be easy for farming" (case 39).

TABLE 2

High fertility attitudes of sample

Advantages of a large family	Baudha %	Rampur %	No.
Economic			
Children are economic advantage	0	16.5	0
Security in old age	56	25.4	23
Health			
Children of ten die	63	21.5	26
Less work for parents	12	5.4	5
Indiv/Family/Caste welfare			
Many children bring status	10	11	4
Maintain family lineage	15	9	6
Strength in caste	2.5	1.5	1
Religion and fate			
Large families are the will of God	7.4	35	3
Ritual performance	5	3	2
If rich, many children are good	37	—	15

Another respondent typified the mixed feelings of many of the respondents by saying that the disadvantages of a small family were that: "No one can guarantee that his children will survive." "So if there are only two children and they die, the parents will be childless." When asked about the advantages of five children he said that: "One advantage of having many children is that they can work in the field. Another is that if the parents are rich enough they can be educated and thus be (economically) helpful to the parents. But now-a-days many children are undesirable because it is too expensive to raise them." (case 15)

In summarizing the findings, it seems that many parents felt that it was too expensive to raise a large family these days. Furthermore, many indicated that if one raises only two or three children well, giving them good food, clothes and education, the children would then feel responsible to help their parents when they were adults. At the same time the child mortality rate in Nepal was 50% for children up to 15 years of age, and still is in many parts of the country. Thus, the fear that children may die is well grounded. Still, it is interesting that many of the parents felt that they would have a better chance of gaining security in their old age by raising a few children well than by having a large number of children and not raising them up properly (Tables 1 and 2).

Attitudes of priority couples towards the family planning programme, workers and methods

One of the major purposes of the study was to determine how a group of villagers who had been in an area where an active family planning programme had been conducted, had reacted and related to that programme.

Eighty-five per cent of the respondents stated that family planning (more specifically limiting family size) was good. Furthermore, they felt that the government should be responsible for making family planning services available to the Nepalese people. About 2.5% did not approve of family planning, 10% were not sure and another 2.5% did not reply. Also, 10% of the sample mentioned that family planning does not work as children are the will of God, while 90% did not mention this. However, when asked about their attitudes concerning the specific aspects of the family planning programmes in their area a number of complaints were found. When asked about their attitudes towards family planning workers (i.e. doctors, nurses, village workers) 33% had no opinions to give. Of those who did reply, 50% said that most workers were lazy and indifferent towards the villagers, 17% said that they were bossy and proud and 6% said they were too aggressive. Thus, of the villagers who stated a attitude towards family planning staff (66% of sample), 73% had negative attitudes and only 27% thought these workers were efficient. Eighty per cent of the sample had codable attitudes towards the family planning acceptors' follow-up service. Of this group, 49% said that follow-up services were bad, 30% good, and 21% had mixed feelings about the thoroughness of the programme. The remaining 20% did not express any opinion.

For example, to a question regarding what the respondent had heard about the family planning programme, many respondents replied in this way: "The only bad thing that I have heard about the family planning programme is the carelessness of the doctors and negligence in following up things (acceptors)." (case 32)

"The family planning programme itself is very good, because it enables us to have that many children which we can afford to raise easily. But there are some people who (family planning nurse, workers) I have heard are very proud and bossy. They do not listen to the poor people. They do not check their patients." (case 020)

"The persons who work in family planning are not good. They do not answer our questions properly and they get angry. When they give such medicines (contraceptives) that make us, the poor people, weak, they must provide some vitamins. If they cannot provide medicines they should at least treat people nicely. Now I feel that it was useless to take them (pills)." (case 39)

Attitudes towards specific contraceptive methods

Of the four major methods on which their attitudes were tested (vasectomy, condom, loop and pill), vasectomy had the highest positive attitude rating (45%). The next most popular method was the condom, 42%, followed by the pill 32%, and only 2.5% of the sample and a positive attitude towards the loop (Table 3).

TABLE 3

Attitudes towards various contraceptive methods

	%	No	%	No	%	No.	%	No.
	Vasectomy		Pill		IUD		Condom	
Positive	45	18	32	13	2.5	1	42	25
Negative	24	10	34	14	76	31	14	6
Mixed	26	11	29	12	14	6	14	6
No answer	5	2	5	2	2.5	1	5	2
Don't know	—	—	—	—	5	2	25	10

The respondents were also asked what they thought were the problems associated with these methods. Regarding the vasectomy operation, of 50 respondents, 16% stated weakness to be an after effect, 10% impotence, 14% backpain. 8% each mentioned insanity, death and "doesn't always work", while 4% each thought it was sinful and that it was a permanent method. Twenty-eight per cent of the respondents did not answer this question. Of the 48 respondents who were asked about the positive effects of the operation, 12% said that it improves the health of the individual. About 31% preferred it because it was a permanent method and therefore convenient, 5% because it was easy to obtain and another 9% because it had few side effects. As many as 43% did not respond.

Of the entire sample, about 45% had complaints about the condom; 12% said it reduced pleasure during intercourse while 9% said that it should only be used with prostitutes. The other negative factors mentioned were: weakness (4.5%), thinning of sperm (4.5%), unnatural (4.5%), doesn't work (2%), "slips inside uterus" (7%) and "may forget to use." (1.5%). About 54% did not give any reply.

Table 4 gives the advantages and negative side effects of the oral pill as stated by the respondents. The majority of the respondents (25%) said that the pill caused weakness and vomiting. The heavy irregular bleeding associated with its use was mentioned by as many as 59% of the respondents. Seventy-three per cent said that it caused weakness as a result of heavy bleeding. These side effects were the main causes of its unpopularity. Besides the inconvenience to the acceptor, heavy bleeding makes the woman ritually impure for a larger period of time.

TABLE 4

Advantages and negative side effects of the pill

	per cent	Number
Advantages:		
Easy to get	7	3
Effective and temporary	7	3
Weight gain	5	2
No answer	81	34
Negative side effects:		
Weakness and vomiting	25	12
Requires good food	15	7
Can't do hard work	11	5
Causes heavy bleeding	6	3
Causes untimely bleeding	11	5
Women forget to take it	13	6
Shameful	4	2
Causes general sickness	2	1
No answer	13	6

In traditional Hindu culture, blood is directly related to strength and loss of it to weakness. Furthermore, the farmers seem to have an exceptionally strong fear of becoming weak.

When asked which family planning method was best, 96% of the sample responded. Fifty per cent thought the vasectomy operation best, followed by the pill (32%) and the condom (10%). None of the respondents felt that the loop was the best family planning method (Table 5). Sixty-one per cent of the respondents said that they had heard about family planning methods and programmes from their friends and relatives. The same number (61%) had heard from variable media, including the radio, movies, posters, etc. Another 17% had got their information from family planning workers and 7% while in the army.

TABLE 5

Methods used by respondents and best methods

Method	Method used		Best method	
	%	No	%	No.
Condom	25	11	10	4
IUD	4	2	—	—
Oral pills	18	8	32	13
Foam tablets	2	1	—	—
Vasectomy	7	3	50	21
Tubectomy	—	—	2	1
Abstinence	2	1	2	1
Never used a method	42	19	—	—
No answer	—	—	4	2

When the sample was asked what the major problem was in adopting a family planning method, 36% replied that it was the fear of side effects; 5% said lack of information about the methods, and 5% that they were too weak to use a method. Forty-three per cent of the respondents stated that they believed there would be no problem in getting a method, as there were numerous family planning clinics in the area, and 11% did not give a reply.

Twenty-five per cent of the couples interviewed, stated that they had used or were using condoms. Eighteen per cent had or were using pills, 7% had had a vasectomy operation, and 4% were using the IUD. Thus, only 42% of the couples had never used a family planning method.

Summary

The study concerned itself with testing the attitudes of a group of married Nepalese villagers towards:

1. family size and family size limitation,
2. the family planning staff and services, and
3. specific contraceptive methods

The study revealed that the sample found that more goals could be achieved by having a small family than by having more children. The economic problems of raising a large family seemed to be the most important factor in the villagers' positive attitudes towards smaller family size. Most villagers felt that the cost of raising a large family was due to the rise in food prices, and the need for educating children at private, high tution schools, giving them better food and clothing, taking them to doctors and clinics when they fell sick, etc. Thus, although the entire sample felt that children were in no way an economic advantage, 63% of the respondents said that a large family would be advantageous as some of the children would be sure to survive and be able to provide some security for the parents in their old age. At the same time many respondents felt that the concept of filial piety was rapidly fading among the younger generation and that parents stood a better chance of being taken care of by the children if they raised a few in a "proper way" rather than raising many children who in the end would turn out to have "bad characters."

Thus, although most of the respondents found advantages with large and small families, 85% felt that it was good to limit one's family largely because it is no longer economically feasible to raise an unlimited number of children. This general attitude was reflected by the fact that 58% of the couples sampled had used a contraceptive method at some time.

The sample was asked about their experiences with family planning personnel and services to determine attitudinal trends that were taking place among people who had some contact with the family planning programme. Most of the respondents had had some personal contact with family planning staff and had either been visited by a family planning worker or had gone to a family planning clinic to get a method or treatment for side effects resulting from contraceptive usage. Seventy-five per cent of the respondents who had an attitude, possessed a negative one towards family planning staff.

The most commonly held attitude concerned the indifference of family planning workers towards the villagers and problems of the workers' condescending attitude towards them. Furthermore, 40% of the entire sample complained that once the villagers accepted a method, the family planning workers no longer took interest in them and failed to follow them up.

At the same time, the respondents had many notions concerning the possible side effects of adopting a family planning method. For example, 72% of the respondents stated specific side effects that could result from a vasectomy, 87% of side effects ensuing from pill usage, and 95% stated side effects that could result from a loop insertion. Furthermore, 36% of the sample stated that they feared adopting a method because of the side effects that they thought might result. When the loop first became available in the area approximately eight years ago, numerous women in the panchayat where the sample was taken had adopted it. Many of these women suffered from side effects and were not followed up. Knowledge of this fact was wide-spread among the sample and as a result only 2.5% of the sample considered the loop as a good method.

The satisfied user and community leader have long been recognised by family planning communication experts as some of the best channels of communicating information about family planning. They have been doing a good job of disseminating the message in the area where the sample was taken, (61% stated that their main source of information about family planning was friends and relatives, unfortunately, much of their message has been negative).

Major findings of the study

1. The sample was generally in favour of limiting family size for economic reasons, and the majority were motivated to do so.
2. Vasectomy was considered the best method for limiting family size because it was permanent and least likely to cause health problems.
3. The loop was the least popular method largely because of the heavy bleeding and weakness which was felt to result from its use.
4. A large proportion of the sample had very negative attitudes towards family planning workers (doctors, nurses, etc.) and family planning follow-up services.
5. The most important source of information regarding family planning methods and services was friends and relatives.
6. The biggest problem the sample found in adopting a family planning method was overcoming the fear of side effects which might result from accepting a method.

Programmatic implications

1. As the cost of raising children increases in Nepal, increasing numbers of Nepali parents will desire to limit the growth of their families.
2. An increasing number of couples may wish to limit their families' growth by adopting vasectomy as a family planning method. Currently, the operation can only be performed regularly in a few areas in Nepal, due to lack of doctors and

facilities. In order to make vasectomy operations available to a larger part of the population, it may be possible to train para-medical teams to perform it in areas where there is no accessibility by road.

3. Due to the high frequency of side effects and the high termination rate of the IUD, it may be advisable to place greater emphasis on other family planning methods.
4. Further research needs to be conducted to determine how better rapport can be established and maintained between the village people and family planning staff members. This might be achieved by localising family planning programmes, so that family planning workers would work and live in their own villages and towns.
5. If the family planning programme is going to maintain rapport with its acceptors, it must provide them with an effective follow-up service, so that acceptors with side effects can obtain reassurance and treatment.
6. Family planning acceptors and local villagers are the most important channels for the dissemination of family planning information. If their experiences with the family planning programme have been positive, their message will tend to be positive, and *vice versa*. Thus, it is essential that the family planning programme caters to the needs and problems of their acceptors. It may well be the key to a successful family planning programme.
7. In areas where intensive family planning programmes are going on, periodic studies need to be conducted to determine how the villagers react to the family planning programme and what, if any. The result of such studies should be used to make the necessary programmatic changes to make the programme more effective.

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THE FAMILY AND FERTILITY

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The influence of socio-economic factors on fertility has been reported in a number of studies. When the findings of such studies from different countries, or even from different parts of one country are compared, one observes that they are broadly in agreement as regards the influence of any one particular factor on fertility. In contrast, work on the influence of cultural factors on fertility is very limited and one finds the results to be varied. One such factor is the influence of the type of family on the fertility of its members.

Sociologists opine that a joint or extended family favours high fertility. Lorimer[1] states that "the whole cultural context in which extended families tend to be idealized is likely to be conducive to high fertility". David[2] supports this view by saying that "in analysing the institutional factors responsible for fertility, one finds the main key in the family". He further adds that a joint family favours fertility. A similar view is expressed by Chandrasekhar[3] when he says that "large family units in India are culturally favourable to a higher birth rate". However, a review of the articles based on empirical data, shows that joint families report a smaller number of children.

Mathen[4] says that "people living in joint families have fewer of the facilities to practice family planning, due to over-crowding and at the same time the co-operation and assistance they obtain from other members of the joint family in rearing the children may be unfavourable to the development of a strong motivation favouring family planning". He further adds that the heads of joint families, for the sake of their 'emotional security' favour large families. Yet the findings as reported by the author show "no significant differences between the family size of couplex living in single families compared to those living in joint families".

Nag[5] found that the average number of children in joint families was less than that in simple families. This finding is supported by Bebarta[6] by data from rural areas in Orissa, and by Poti and Datta[7] and Pakarasi and Malakar[8] from studies conducted in West Bengal. As an explanation as to why members of joint families have fewer children, Nag puts forth "the variation in the normal frequency of coitus" as one of the factors responsible for the variations in the fertility levels of the women of the two types of families. A similar view regarding over-crowding affecting coital frequency and, in turn, fertility has been expressed by Smith[9] when discussing the lower level of fertility among Chinese women in Malaya.

In their article, Pakarasi and Malakar state that "though the study of Nag has its value from the point of making available empirical data, the method employed for analysis of the data was not strong enough to establish a statistically sound conclusion". They therefore calculated standardised averages of Nag's data. The findings from these calculations show that the fertility differentials of the women of these types of families "were not widely fluctuating".

The two authors further state that "marriage duration appears to be a more satisfactory norm for measuring fertility performances and their differentials". To test this hypothesis, they used data from urban areas of Calcutta in West Bengal. A total of 1018 couples were studied of which 456 belonged to simple families and 562 to joint families. They were further classified by three socio-economic groups and also into four groups by duration of marriage. From these data, Pakarasi and Malakar concluded that the women of the two higher socio-economic groups had fewer live births when they belonged to joint families. However, the women of class III had more children when they belonged to joint families. However, in this group, a trend in the averages could not be proved as was possible for the earlier class. The authors thus concluded that "a joint family is not necessarily a pre-requisite to higher fertility".

These variations in the findings of different scientists interested the author of this paper to study the effect of family type on family size.

Sample

The data for this paper were obtained from 27 villages in Nasik district in the State of Maharashtra. The sample was selected so as to be representative of the population of the district. The data analysed here refer to 1,982 women belonging to nuclear families and 1,213 women belonging to joint families.

Results

Tables 1 and 2 show the average number of live births to the women of nuclear and joint families respectively.

The average number of live births was standardised for age at marriage and for the duration of effective married life respectively, taking the total population of 3195 (1982 + 1213) as a standard. The results are given in Table 3 and Table 4 respectively.

TABLE 1

Average number of live births to women of nuclear families by duration of effective married life (EML) and age at marriage (AM)

EML (years)	Ages at marriage (AM) in years				
	Upto 15	16-19	20 +	All	Number of women
Upto 5	1.23	1.12	1.53	1.21	257
6-12	2.88	2.96	2.22	2.86	438
13+	5.53	5.47	5.43	5.52	1287
All	4.54	3.81	3.56	4.37	1982
Number of women	1558	349	75	1982	

TABLE 2

Average number of live births to women of joint families by duration of effective married life (EML) and age at marriage (AM)

EML (years)	Ages at marriage (AM) in years				
	Upto 15	16-19	20+	All	Number of women
Upto 5	1.20	0.93	1.73	1.19	281
6-12	2.58	3.57	3.00	2.78	234
13+	5.88	6.29	3.62	5.90	698
All	4.35	4.04	2.43	4.13	1213
Number of women	933	227	53	1213	

Table 3 shows that, but for the duration of married life 13+, women of nuclear families have a higher average of live births. Table 4 shows the reverse, that is, except for the group of women married

TABLE 3

Average live births to women of nuclear and joint families by duration of effective married life (EML) standardised for age at marriage (AM)

EML (years)	Average live births to women of	
	Nuclear families	Joint families
Upto 5	1.22	1.17
6-12	2.87	2.78
13+	5.52	5.86
All	4.37	4.22

at ages 20+, all the others have a higher average of live births for women belonging to joint families. When the data were standardised for both the age at marriage and duration of married life, the average live births for women of nuclear families was 4.24 and that for joint families was 4.43. This clearly indicates that joint families encourage fertility.

TABLE 4

Average live births to women of nuclear and joint families by age at marriage (AM) standardised for duration of effective married life (EML)

AM (years)	Average live births to women of	
	Nuclear families	Joint families
Upto 15	4.25	4.40
16-19	4.21	4.81
20+	4.10	3.17
All	4.23	4.42

The papers presenting empirical data on fertility and family type, which are discussed here, were mostly based on studies from the Eastern States of India, whereas the present paper is based on the Western State of Maharashtra. It is quite likely that the families in these two regions have variations in their living patterns, but it is interesting to note that the data used for the present paper also showed that nuclear families had larger numbers of average live births. It was only when the data were standardised for both the duration of married life as well as the age at marriage of the women, that one found that the members of joint families had larger averages of live births. It is therefore obvious that any study of this nature that enquires into the influence of cultural factors needs to go into a little more detail.

The fact that the grouping of the families was based on their status with respect to the family type at the time of the survey, calls for further investigation. It may be more meaningful to study the type of family over a period of time rather than at a point of time, as is obtained in any survey data. The women of nuclear as well as joint families included in this study were, therefore, grouped by their duration of marriage and age at marriage respectively.

TABLE 5

Distribution of the sample by duration of effective married life (EML), age at marriage (AM) and type of family

EML (years)	Type of family			
	Nuclear family		Joint family	
	No.	%	No.	%
Upto 5	257	13.0	281	23.2
6-12	438	22.1	234	19.3
13+	1287	64.9	698	57.5
All	1982	100.0	1213	100.0
Upto 15	1558	78.7	933	77.0
16-19	349	17.6	227	18.7
20+	75	3.7	53	4.3
All	1982	100	1213	100

Table 5 indicates that the proportions of women by their effective duration of married life are different for women belonging to the two types of families, whereas the differences in the two groups by age at marriage are very minor. From this one may surmise that the pattern of the age at marriage for the two groups is similar while differences are deserved in their proportions by duration of effective married life. It is quite likely that many of the newly married couples live with their parents and other relatives in their early years of marriage, but as they get economically independent or as the problems of joint living come more to the surface, the couples establish their own homes. By then, they probably have a few children.

The differences found in the averages of live births among the women belonging to the two types of families may, therefore, be operating through the duration of married life.

Countries such as India are known to show many different family living patterns than those found in Western countries. Many papers on Indian data report that there are not much urban-rural fertility differentials in India. This may be due to poor data from the rural and comparatively better data from the urban areas. But it may also be due to the fact that the Indian families do not get urbanised in the sense that they do not completely give up the rural influences. It may be similarly argued that Indian nuclear families do not sever ties with their relatives and when major family decisions are taken, the members of nuclear families are bound to consult their relatives.

Any study of this type intended to study the effect of family type on fertility performance should therefore be carefully planned before any conclusions are drawn. In planning such a survey two points should be carefully looked into, viz., (1) the sample size should be large enough to give the variance within desired limits. (2)) the definition of the type of family should be clear, i.e., that period of the life of the couple spent in that particular type of family should be taken into account in the interpretation of the data.

Summary

Sociologists have opined that the joint family encourages fertility. On the other hand, empirical data from studies in Eastern India show that the women from joint families have a smaller number of average live births.

The data obtained from a sufficiently large number of women in this study show that women from joint families had larger average number of live births when the data were standardised for duration of effective married life and age at marriage of the women. Analysis of the present sample shows that there was not much difference in the distribution of women by their age at marriage in the two groups, viz., the nuclear and joint families, but there were significant differences when durations of marriage were considered. It is quite likely that the women lived in joint families during the earlier periods of their marriages and probably over time, either due to the couples' improved economic situation and/or the cumulative effects of the problems of joint living, came to live as nuclear families. Thus, an analysis that did not take into account the duration of married life showed that women from nuclear families had larger average live births.

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FAMILY PLANNING WORKERS AND MASS VASECTOMY CAMPS

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Introduction

In India, the mass vasectomy camp was organised for the first time in the Ernakulam district of Kerala in 1970. The services rendered by the camp differed from those offered by Government hospitals and clinics in that: (1) the camp was more organised and job-oriented with respect to reaching people to make them accept sterilisation, with a proposed plan of achieving a fixed target, (2) the incentives offered to motivators, family planning staff as well as to acceptors were increased and greater facilities and care were provided to the acceptors.[1]

The Kerala camp was a grand success. The Government of India, since then, has organised mass vasectomy camps on the same lines, in many States in the country. The last of the series was organised in 1972-73 in eight States covering 132 districts.[2] No mass camps were held during 1973-74 and since then, the Government has decided to discontinue the organisation of camps with increased incentives.[3] It may be asked: What led the Government to take this sudden decision? Did not the camps prove to be effective under the existing incentives? Any attempt to assess the results of the mass sterilisation camps should consider the large financial involvement of the Government in supporting such camps in addition to providing the normal family planning services at Government hospitals and clinics. Since the success of a camp depends to a notable extent on the administrative efficiency of the organisers and the motivational approach of the family planning workers,. it is essential to examine these aspects of Government camps in order to make an appraisal of the Government's action. In the present paper, we will examine the second important essential of mass vasectomy camps, viz., the motivational approach of the family planning workers.

Methodology

The data used in this study have been taken from a follow-up study of a sample of vasectomised males operated upon in the Government camps held in the Gaya and Muzaffarpur districts of Bihar during February 1972. On an average, there were about 300 vasectomised males per block in Muzaffarpur district and about 150 vasectomized males per block in Gaya district. Our purpose was to cover about 2,000 cases from each district and it was decided to study 8 blocks from Muzaffarpur district and 13 blocks from Gaya district. The total number of blocks to be selected from each district were allocated to different sub-divisions (in whole numbers), according to the proportion of the number of blocks in the sub-division to the total number of blocks in the district. The required number of blocks were then selected from each sub-division in accordance with the sample by random sampling. The blocks surveyed were Kanti, Bochaha, Musharhi, Dumra, Parihar, and Bairgania in Muzaffarpur district and Warisaliganj, Hisua, Narhart, Bodh-Gaya in Gaya district.*

The unit of this survey was a male vasectomised in the camp. The addresses of such men were collected from the respective District Family Planning Bureaux, and efforts were made to contact all the operated men who had come from the above sampled blocks. The survey was conducted during the months of April and May 1972.

The questionnaire (see Appendix) used for the follow-up study covered the general characteristics of the respondents besides specific questions related to their motivational level. The first two questions, 23(a) and 23(b), described the occupation of the promoters who could influence the respondents to accept family planning, while questions 23(c), 23(d), and 23(e) assessed the motivators' approach towards the respondents in communicating the importance of accepting vasectomy in camps for family planning and other reasons. Questions 45(a), 45(b) and 45(c) assessed the behaviour of family planning workers towards the acceptors after the operation, which could go a long way in encouraging potential acceptors to go in for the operation at a camp or in a clinic.

A total of 1,559 vasectomised males were contacted. Of these, 1,436 who were married once and were currently living with their wives were interviewed for the present study.

Results

Social history of respondents

The average age of the respondents was 42.62 years with three persons in the lowest age group (20-24 years) and two in the highest

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* It was not possible to survey all the blocks selected for the follow-up study because of certain difficulties encountered in the field, and therefore, the total number of vasectomised males (currently in married status) contacted was 1,436

(70-74 years). The ages of their spouses was also spread over 20 to 74 years with 17 persons aged 20-24 years and one 70-74 years. 'The average age of the spouses was 38.29 years.

About 93 per cent of the respondents were Hindus, 7 per cent were Muslims and Christians and as many as 79.18 per cent were illiterate. Only 1.53 per cent of the remaining had studied beyond Matriculation (including vocational and technical education), which was 'the highest qualification among the respondents. About 96 per cent of the wives of the respondents were illiterate, and among the rest, none had studied beyond Matriculation. About 7 per cent of the respondents were labourers, 22.56 per cent were cultivators and 14 per cent were distributed between service holders, businessmen, teachers, fishermen, etc.

The monthly household expenditure of the respondents was less than Rs. 100 and only 0.63 per cent of the households spent over Rs. 1,000 per month, the average monthly expenditure being Rs. 153.61. On an average, the respondents had 5.61 children ever born of whom 4.12 were surviving at the time the respondents accepted vasectomy. A sex distribution of ever born children gave an average of 3.14 male and 2.47 female children among whom only 2.34 and 1.77 respectively survived.

Occupation of promoters

Promoters were defined as those persons who not only contacted the acceptors in connection with the vasectomy operation but were also perhaps the ones who first informed the acceptors about the camps. In some cases, they might have introduced the method itself to the acceptors as a permanent method of family planning. This becomes apparent when one considers that the majority of the units in this sample were poor and illiterate. In this situation, evidently, trained health and family planning personnel with the help of local leaders would have been more effective. It would have been still better if the persons entrusted with the job of public contact were themselves vasectomised and were satisfied with the operation However, such information about the promoters was not available, though it would perhaps help understand in a better way, the reasons that stand in the way of effective promotion. In actual practice, however, it was observed that the family planning staff contacted and influenced a very low percentage of males; only about 26 per cent (Table 1) of the respondents in our sample, the rest being motivated by non-family planning persons. The figures in Table 1 are almost the same indicating that the persons who contacted the respondent were perhaps also able to convince him notwithstanding the cases which were contacted by a motivator but ultimately did not undergo the operation.

TABLE 1

Occupation of persons who contacted the respondents or influenced them to make a positive decision

Occupation of person who contacted/influenced the respondent	Respondents contacted		Respondents influenced	
	Frequency	Percentage	Frequency	Percentage
Self-motivated	397	27.65	399	27.79
Agricultural labourer	160	11.14	162	11.28
Skilled non-agricultural labourer	13	0.90	12	0.84
Service holder	138	9.61	139	9.68
Cultivator	143	9.96	142	9.89
F. P. field staff	371	25.84	369	25.70
Lady Health Visitor	0	0.00	0	0.00
Relation	1	0.07	1	0.07
Friend	0	0.00	0	0.00
Any other	212	14.76	209	14.55
No response	1	0.07	3	0.20
Total	1,436	100.00	1,436	100.00

Motivational approach of promoters

The promoters asked the respondents to undergo the vasectomy operation at these camps on different grounds. Though the main purpose of the operation is to stop further child-births, very few respondents (9.54%) were motivated to undergo vasectomy mainly for family planning reasons. The reasons for this were obvious. A group of people among whom about 70 per cent were labourers, about 20 per cent were literate and whose average monthly expenditure (with a possible bearing on income) was only Rs. 153.61 can hardly be expected to appreciate the importance of family planning. Family planning as a distant means to reduce family expenditure was perhaps not as important to them as its incentive—the money and material which were of immediate use. So, when the motivators had to convince such persons, they stressed on incentives (Table 2). However, many respondents (about 48%) were asked by the promoters to accept the method because they would get cash incentives besides a dhoti, or a lottery ticket, etc., and because this would also help them to plan their families. Further, on an average, each

TABLE 2

Distribution of respondents according to the benefits of vasectomy as explained to them by promoters

Benefits	Frequency	Percentage
Does not arise*	427	29.74
Rs. 60 + one dhoti	304	21.16
For family planning	137	9.54
Rs. 60 + F.P. + dhoti	489	34.05
Rs. 60 + F.P. + dhoti + Lottery ticket	64	4.46
Rs. 60 + family planning	2	0.14
Rs. 60	1	0.07
No response	12	0.84
Total	1,436	100.00

* This includes respondents who were self-motivated and those who were contacted by motivators but were not explained any benefits

respondent had more than four surviving children at the time of the operation and the average age of the wives was 38.20 years. The motivators, therefore, seemed to have contacted such males, who had almost completed their family size, i.e., those who would contribute comparatively less towards the population increase in the future and hence were comparatively less significant with regard to the success of the family planning programme. Evidently, such persons were more likely to be motivated to accept family planning because of the incentives, especially if they were poor and illiterate. It seems that the motivators either did not or were not successful in motivating younger persons having fewer children. However, almost all the respondents were satisfied (Table 3) with the benefits accruing from the operation at camps as explained to them by the motivators. Only 0.63% of the respondents were not satisfied with the information given by their motivators and the question was not relevant to about

TABLE 3

Distribution of respondents according to their satisfaction of the information received from motivators

Satisfaction of the respondents	Yes	No	No response	Does not arise	Total
Frequency	985	9	9	433	1436
Percentage	68.59	0.63	0.63	30.15	100.00

30 per cent of the respondents because they were either not contacted by the promoters or were not told about any advantages of vasectomy. Besides, 397 or 27.65% of our respondents were not contacted by any promoter and perhaps they underwent the operation at the camps on their own initiative. This means that the rest, i.e., about 72% of the respondents were contacted and motivated (Table 1) by either the family planning workers or by non-family planning persons. The latter included agricultural labourers, skilled non-agricultural labourers, cultivators, relations, friends, etc., while the family planning workers were doctors, lady health visitors, auxiliary nurse midwives, extension educators and other family planning field staff.

It was of interest to examine the differences in the motivational approaches, if any, of the family planning and non-family planning workers, in relation to the characteristics of the respondents contacted. Therefore, in order to test the association between the profession of the motivators and certain socio-economic and demographic characteristics of the respondents, cross tables were prepared by omitting those respondents who did not respond or who accepted vasectomy at camps on their own initiative. The results are presented in Table 4. Further, in order to test the association between each of the characteristics and the profession of the motivators, a chi square test was applied for each case. Table 4 shows the observed and expected chi square values (at a 5% probability level) for each case.

The profession of the motivators, viz., family planning or non-family planning workers was found to be associated with caste, religion, age, and years of schooling of the respondents. This is borne out by the fact that the calculated chi square value in each case, at requisite degrees of freedom, was greater than the expected value at the 5% level of significance.

This implies that the family planning motivators used different approaches towards the prospective acceptors with respect to their caste and religion, age and schooling. On further examination (calculating the percentages in Table 4), the motivators were found to be comparatively biased towards persons who were younger (35 years and less), or were higher caste Hindus and had had more years of schooling.

Contact of family planning staff with acceptors, post-operation

Information on post-operative care constitutes an important aspect of motivational work, because the acceptor is a source of propaganda. One expects him to talk about the vasectomy to his relatives and friends. Evidently, he would be asked the advantages and disadvantages of the operation as well as the merits and demerits of

TABLE 4

Distribution of motivators by respondents' characteristics

Characteristics of respondents	Motivator†			Chi square value††	
	F. P. worker	Non-F. P. worker	Total	Expected	Observed
Caste and Religion : ‡					
Class I	44	58	102		
Class II	179	295	474		
Class III	129	257	386	8.69	7.82
Class IV	18	57	75		
					(d. f. = 3)
Total	370	667	1,037		
Ages (years)*:					
<35	62	80	142		
>35	308	587	895	4.57	3.84
					(d. f. = 1)
* No response 1					
Total	370	667	1,037		
Monthly household expenditure (Rupees) **					
<100	127	276	403		
100-399	225	364	589		
400-799	11	14	25	5.47	7.82
800 +	2	3	5		
					(d.f. = 3)
** No response · 16					
Total	365	657	1,022		
No. of male children surviving :					
Nil	9	26	35		
1-3	307	537	844	1.76	5.99
					(d. f. = 2)
3 +	55	104	159		
Total	371	667	1,038		

†† At a 5 per cent probability level.

† No response : 1 ; Self-motivated : 397.

‡ Class I : Brahmins, Bhunihar, Rajput or Kayastha.
Class II : Other Hindu castes (except Scheduled and Scheduled tribes).
Class III : Scheduled Castes and Tribes.
Class IV : Other religions (Muslim, Sikh, etc)

TABLE 4 (*Contd.*)

Characteristics of respondents	Motivator†			Chi square value††	
	F. P. worker	Non-F. P. worker	Total	Expected	Observed
Schooling :					
Some schooling	76	99	175	5.42	3.84 (d. f. = 1)
Total	371	667	1,038		
Age of youngest child :§ (*years*)					
0-1	98	158	256		
1-5 (more than one)	203	348	551	3.99	5.99 (d. f = 2)
About 5	69	159	228		
§ No response (age of youngest child : 1, no living child 2)					
Total	370	665	1,035		
Occupation :					
Labourer	261	504	765	3.33	3.84 (d. f. = 1)
No schooling	295	568	863		
Non-labourer	110	163	273		
Total	371	667	1,038		

camps. If a respondent is convinced about the utility of the vasectomy operation but is not properly cared for and consequently has complaints and side-effects after the operation, he would normally not recommend the operation. On the other hand, if he has undergone a vasectomy at a camp, though reluctantly, and if he was visited and properly cared for by the family planning staff and did not have any trouble thereafter, he would become a supporter of vasectomy and possibly a prospective motivator.

Of the 1,436 respondents only 427 (29.74%) answered in the affirmative. No follow-up visits were made on the remaining respondents, i.e., 1,009 (70.26%) by the staff. However, most of the few who received post-operation visits by family planning personnel, mentioned that these visits proved useful ; twelve persons did not find such visits useful. Of the remaining 415, 304 said that they received useful advice from the family planning workers who visited them, 12 were reminded of the post-operative precautions, 16 received medicine, 48 mentioned other advantages, while 35 did not give any specific reason. Table 5 shows the frequency of visits paid by the family planning staff.

TABLE 5

Frequency of visits by family planning staff

Frequency of visits	1	2	3	4	5	6	7	8	Total
Visiting F.P. staff :									
Family Planning Doctor	6	1	1						8
Lady Health Visitor	1	2	2		1				6
Auxiliary Nurse Midwife	11	17	12	3					43
Extension Educator	64	24	2		2				92
Other F.P. Field Staff	216	86	23	5	4	1		1	336
Total	298	130	40	8	7	1	0	1	485

Summary

1. Of 1,436 respondents vasectomised at the Bihar camps, only 26% were contacted by family planning workers with a view to motivate them to undergo vasectomy in a camp. The remaining accepted vasectomy either on their own initiative (about 28%) or after being contacted by non-family planning personnel (about 46%).
2. Only 9.54% were persuaded by the motivators to undergo the operation for purely family planing reasons. The remaining (about 62%, notwithstanding the cases who were self-motivated) were explained the benefits they would receive by way of incentives.
3. The family planning staff working as motivators showed a comparative bias (regarding the motivational approach) towards persons having a greater number of years of schooling, those aged 35 years and less, or those who were upper caste Hindus.
4. The family planning workers visited only about 3% of the respondents after the operations.

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APPENDIX

Questions relevant to the motivational approach of promoters

Selected from the questionnaire supplied by the National Institute of Family Planning, Government of India, New Delhi...The detailed questionnaire can be had from the above organisation.

(45) (a) Now let me ask some questions connected with the vasectomy done/ Could you please mention the name(s) and/or profession of person(s) who contacted you in connection with the operation ?

Persons	Profession

(b) Who was most influential to you in taking the decision to undergo the operation ? (Probe for Promoter).

(c) Did he tell you anything about the vasectomy operation ? Yes / No.

(d) If yes, what ?

(e) Were you satisfied with the information ? Yes / No.

(45) (a) After the operation, did any family planning staff visit you ?

(b) If yes, who (professionally) were they ?

	Personnel	Frequency of Visit
(1)	—	—
(2)	—	—
(3)	—	—

(c) Was their visit useful to you ? (Yes / No). If yes, how ?

DEMOGRAPHIC CHARACTERISTICS OF TUBECTOMY ACCEPTORS IN KAIRA DISTRICT

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Introduction

Kaira is one of the prosperous districts of Gujarat State with a population of 2,451,387 according to the 1971 census, and an area of 7,194 sq. kms. The population of the district increased by 473,847 or 23.96% during the 1961-71 census period. The district observed the highest growth rate in the decade 1961-71 during a seventy-year period, though this rate of growth is lower than that observed for the whole State, which is 29.39%. Kaira has the highest density (341 persons /sq. kms.) among all the districts in the State, which is about three times the density of Gujarat. The sex ratio for Kaira district is 894 as against 934 females per 1,000 miles for Gujarat. Kaira has a literacy rate of 42.5% as against the State literacy rate of 35.8% and ranks second among the districts of the State. The scheduled castes and tribes in the district constitute about 7% of its total population. The majority of the population is in Kaira's villages and small towns. Nadiad is the only town in the district with a population of one lakh and over according to the 1971 census.

The present study aimed at studing the demographic characteristics of the females undergoing sterilisation during 1972-73 in the district. It also provides a comparative picture of the demographic characteristics of the tubectomy acceptors in 1964.

Facilities for Sterilisation

There are 9 urban and 19 rural family welfare planning centres and 104 family welfare planning sub-centres in Kaira district. At the district level, a District Family Planning Bureau operates as a part of the district health organisation to provide mass publicity, mobile services and supervision to urban and rural centres and sub-centres. It is headed by a District Family Planning Medical Officer who is assisted by an Administrative Officer, an Education and Information Officer, paramedical personnel, a Statistical Assistant, etc.

Sterilisation Performance

The number of vasectomy and tubectomy operations by year since inception of the programme in Kaira district is shown in Table 1.

TABLE 1

Number of sterilisations by year

Year	Vasectomies	Percentage to total	Tubectomies	Percentage to total	Sterilisations
1957 to 61	208	12.3	1,489	87.7	1,697
1962	145	9.8	1,337	90.2	1,482
1963	147	7.0	1,946	93.0	2,093
1964	485	10.2	4,253	89.8	4,733
1965	313	9.0	3,170	91.0	3,483
January to March 66	59	5.8	962	94.2	1,021
1966-67	1,144	15.9	6,037	84.1	7,181
1967-68	7,014	46.2	8,180	53.8	15,194
1968-69	5,129	34.1	9,924	65.9	15,053
1969-70	3,631	30.8	8,155	69.2	11,786
1970-71	2,409	21.6	8,760	78.4	11,169
1971-72	20,822	77.5	6,047	22.5	26,869
1972-73	2,345	28.7	5,828	71.3	8,173

The figures in Table 1 indicate that although the sterilisation programme in the district started way back in 1957, it gained momentum only from 1966 onwards, and the sterilisation performance doubled during 1967-68 as compared to 1966-67. During the earlier years, tubectomies were preferred to vasectomies and about 85-93% of all sterlisations upto 1966-67 were performed in the female. Later, more emphasis was laid on vasectomies and the percentage of vasectomies to all sterilisations was about 22 to 47 during 1967-68 to 1972-73, except in the year 1971-72 when it was 77 due to the mass vasectomy campaign where higher incentives were given. Inspite of these efforts to make vasectomy more preferable to tubectomy, the acceptors still preferred tubectomy.

Materials and Methods

Demographic Sheet

In order to collect, compile and analyse the family planning statistics centrally, a demographic sheet shown in Appendix 1 was introduced through-out the State from April, 1972. All the districts had been requested to supply the particulars of all vasectomy, tubectomy and IUD acceptors in the demographic sheet every month to the Demographic and Evaluation Cell at the State level.

Sampling procedure

The sampling unit constituted a female undergoing the tubectomy operation during 1972-73. Out of 5,828 tubectomies reported in the monthly reports of 1972-73, the information in the demographic sheets was only available for 5,769 tubectomies. All the tubectomies were serially numbered by date of operation, and a 20% systematic sample with a random start was taken from the serial numbers. The selection of the sample was done at the State level.

Processing of data

Tabulation was done by hand-sorting at the State level by the field investigator. However, it is recommended that mechanical equipment available at the State Bureau of Health Intelligence be used for tabulation when complete data for all the districts is made available.

Results

General presentation

Some of the tables contain small frequencies on which percentages have been calculated. Hence, the percentages based on 20 frequencies or less should not be used for comparison.

Tubectomies by age-group

The information about the age of the sterilised females is an important demographic factor. Table 2 shows the distribution of sterilised females by age.

The largest number of tubectomies viz., 42.2% were conducted in the age-group 25-29, followed by 37.5% in the age-group 30-34. Further, about half of the tubectomies were conducted amongst females aged less than 30 while about 88% were below 35 years. The average age of the sterilised females during 1972-73 worked out to 30.3 years with a standard error of 0.12. The median age was 30.00 and the modal age, 29.4 years.

Tubectomies by number of living children

Table 2 also presents a distribution of the tubectomy acceptors by number of living children.

The maximum number of tubectomy acceptors (32.7%) had four living children followed by 27.3% who had three. It further indicates

TABLE 2

Tubectomies by age and number of living children

Age-group (years)	Number of living children										Average no of children	Total tubectomies	Percentage	Cumulative percentage
	1	2	3	4	5	6	7	8	9	10				
20-24	4	19	50	16	3	—	—	—	—	—	2.7	92	8.0	8.0
25-29	3	38	178	172	69	11	13	1	—	1	3.7	486	42.2	50.2
30-34	1	13	70	158	107	49	22	9	3	—	4.5	432	37.5	87.7
35-39	—	5	17	31	36	20	19	3	—	1	4.9	132	11.4	99.1
40-44	—	—	—	—	5	2	2	—	—	2	6.5	11	0.9	100.0
All age-groups	8	75	315	377	220	82	56	13	3	4		1,153		
Percentage	0.7	6.5	27.3	32.7	19 1	7.1	4.9	1.1	0.3	0.3		100.0		
Cumulative percentage	0.7	7.2	34 5	67.2	86 3	93.4	100 0							

that about 35% of the women had been operated when they had three or less children. About a third had five and more children. The average number of living children worked out to 4.1 with a standard error of 0.04. The median number of living children was 3.5, while the modal value was 4.

About 12% of the women had children of only one sex. Of these, 9.8% had no daughters, while they had one to five sons. It is rather interesting to note that about 2% of the sterilised females had no living male issue but one to six female children.

TABLE 3

Tubectomies by number of living children and sex

Number of female children	Number of male children									Total	Percentage
	0	1	2	3	4	5	6	7	8		
0	—	6	44	39	22	2	—	—	—	113	9.8
1	2	27	149	95	33	9	2	1	1	319	27.7
2	4	119	181	74	29	6	—	—	—	413	35.8
3	8	72	88	23	22	1	—	2	—	216	18.7
4	7	20	15	15	5	2	—	—	—	64	5.6
5	3	5	11	6	—	2	—	—	—	27	2.3
6	1	—	—	—	—	—	—	—	—	1	0.1
Total	25	249	488	252	111	22	2	3	1	1153	100.0
Percentage	2.2	21.6	42.3	21.8	9.6	1.9	0.2	0.3	0.1	100.0	

The average number of male and female children born to these women worked out to 2.2 and 1.9 respectively, with about 118 male to 100 female children.

Educational status

About 61.1% of the tubectomy acceptors were illiterate. Of the rest, 16.4% had completed primary school education, 11.3% middle school, 3.3% high school and 9.5% were graduates or post-graduates. Among their husbands, the respective percentages were 23.8, 16.6, 10.7 and 4.2. Only 34% of the men were illiterate, and 7.4% and 10.7% of women and men respectively were literate without any schooling. This shows that literate women or women whose husbands are literate were better represented in the sample than illiterate women or husbands. Thus, the education of women and of their husbands appeared to play an important role in decision-making for acceptance of tubectomy.

Occupation of husbands

The occupational pattern of the husbands of the tubectomy acceptors showed that 52.6% and 15.4% of the husbands of the sterilised women were cultivators and agricultural labourers respectively as against 48.4% and 23.8% in the general population. Thus, the representation of agricultural labourers in the tubectomy programme was less than their representation in the general population. The husbands of the sterilised females who were engaged in trade and commerce accounted for 6% of the sample which was in the same proportion as in the general population. Occupations like livestock, fishing, hunting, mining and quarrying; manufacturing, processing, servicing and repairs; construction, transport, storage and communications—had only a 1.7% representation as against 13.7% of this category in the general population. The occupational group for other services amounted to about 24% as against 8.1% according to the 1971 census. The lack of sufficient information made it difficult to allocate specific occupation groups and hence classify the same in other services, thereby showing a higher proportion than in the general population.

Income

The information on the annual income of the sterilised couples is presented in Table 4.

TABLE 4

Annual income of couples

Yearly income (Rupees)	Number of couples	Percentage	Cumulative percentage
Below 500	63	5.5	5.5
500-999	293	25.4	30.9
1000-1499	286	24.8	55.7
1500-1999	179	15.5	71.2
2000-2499	123	10.7	81.9
2500-2999	39	3.4	85.3
3000-3499	81	7.0	92.3
3500 & over	89	7.8	100.1
Total:	1,153	100.1	

It was rather difficult to get the correct information on incomes. The proportion of sterilised couples with an income below Rs. 1,000 per year was 36.4%. About 29% had an annual income of more than Rs. 2,000.

Religion

The population of Hindus among the tubectomy acceptors was 88.6% as against 88.3% of Hindus in the total population of the district. Muslim women in the sample were about 6% which is slightly lower than the proportionate strength (9.1) in the population of the district by the 1971 census. Jains (0.3%), Sikhs (0.1%), Christians (1.7%) and others (3.2%) totalled 5.3% as against their proportionate strength of 2.5% in the population (1971 census). The religionwise distributions of the sample and of the corresponding 1971 population were not statistically significant (chi square test).

A Comparison of Tubectomy Acceptors of 1972-73 with those of 1964

The mean age and mean number of living children (with standard errors) of the women who underwent the tubectomy operation during 1972-73 were 30.3 ± 0.123 and 4.13 ± 0.043. The corresponding figures for 1964 were 33 ± 0.139 and 4.74 ± 0.044.

The average age seems to have reduced from 33.0 to 30.3 and the average number of living children from 4.74 to 4.13 between 1964 and 1972-73. The test of significance (chi square test) shows that the reduction in the mean age of sterilised females and the mean number of living children is statistically significant. However, for a dramatic drop in the birth rate to occur, the average age of the sterilised females and the average number of living children should be reduced.

It was also noted that about 50% of the tubectomies in 1972-73 were performed in women under 30 as against 25% in 1964. Similarly, about 35% of the women had three or less children in the 1972-73 group as against about 19% in the 1964 group. This shows an increase in the proportion of sterilised females in the younger age-groups and with three or less children during 1972-73 as compared to the 1964 group.

There was a significant reduction in the ratio of male to female children among the sterilised females in the two groups. The ratio was 146 male to 100 female children during 1964 which declined to 118 male to 100 female children during 1972-73, indicating a change in the desirability of more male children and thereby limiting the total number of children. This will help to accelerate the family planning programme in future.

Summary

In spite of all the efforts to make vasectomy preferable to tubectomy, couples still prefer tubectomy to vasectomy in Kaira. This indicates a need for increasing facilities for tubectomy operations.

The average age of the tubectomy acceptors was 30.3 years and about half of them were under 30. The average number of children was 4.1 and about 35% had three or fewer children. There were about 118 male to 100 female children. Literate females or females whose husbands were literate were more represented than illiterate females or those whose husbands were illiterate.

A significant reduction in the average age, average number of living children and number of male living children per 100 female children was observed in women operated during 1972-73 as compared to those operated in 1964. This shows an improvement in the quality of operations done in 1972-73 over those performed in 1964. However, for a dramatic drop in the live birth to be evident, the sterilisation performance should be increased to a greater extent to cover younger age-groups with lower parities.

ACKNOWLEDGEMENTS

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REFERENCE

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APPENDIX I

DEMOGRAPHIC SHEET

VASECTOMY/TUBECTOMY/I.U.C.D. INSERTIONS

Name of service centre ______ Address ______ District ______ Month ______

Number Serial	Number Yearly	Case card Number	Place and date of operation	Name of beneficiary	Present Address Village/Taluka District	Age		No. of living children	
						Wife	Husband	Male	Female
1	2	3	4	5	6	7	8	9	10

Literacy		Reli-gion	Occupa-pation	Total yearly (in Rs.) income	Name of Surgeon	Designation and qualifications	Name of Motivator	Address	Occupa-pation	Remarks
Wife	Husband									
	12	13	14	15	16	17	18	19	20	21

GROWTH OF SMALL TOWNS IN INDIA, 1961–1971

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In a vast country like India small towns, defined as towns with populations below 20,000, have a very important role to play in the process of planned regional development. There is an increasing concentration of population and industries in big cities. It is therefore felt that there is a need for the decentralisation of industries for a healthy, balanced regional development and for getting rid of the evils of heavy population concentration in a few places.

The growth of small towns can occur in two ways—either by the emergence of new towns or by the development of existing towns. Population redistribution to a considerable extent makes this possible. Population redistribution, in turn, depends on the location, function and internal structure of the emerging new towns or the developing existing towns.

Small towns are an important link between remote villages and big metropolitan areas and thus have an important place in the process of rural-urban migration. They can bring about the gradual transformation of rural areas through their complementary functions of agricultural marketing, trade and commerce, social facilities and public services.

Inspite of the recognition of the importance of small towns, the subject has been sadly neglected, though Suri and Bose[1] have done some work in this field. The census organisation has also programmed to undertake an ancillary project of surveying 200 small towns for studying the role that has been played by different types of small towns[2].

Objectives and Scope

The objective of the present study was to examine the patterns of growth of a number of small towns and also the growth of their populations. Considering the vastness of this topic, the present study is divided into two parts. The first part concerns (i) the contribution of the number and population of small towns to the total number of towns and total urban population; (ii) inter-state differentials in the increase in the number of big towns and small towns in India; (iii) a comparison of the growth rates of the population in all the six size classes during 1951-1961 & 1961-71, and (iv) the growth of tiny towns and new towns in India.

Since the number of small towns in India is too large and the factors affecting population growth are also numerous, the second part of the study is devoted to a case study of rapidly growing, stagnant and declining towns in Andhra Pradesh. The classification of the towns in Andhra Pradesh into rapidly growing small towns in this case refers to the small towns having a population growth of more than 50% during 1961-1971, the stagnant small towns refer to those with a population growth between 0 to 10%, and lastly, the declining towns are those which experienced a decline in population during 1961-1971.

Source of Data

The data utilised in the study were taken from the census of India 1961 and 1971[3a, b]. Information on the functional nature of small towns in 1961 was taken from the *Functional Classification of India's Towns.*[4] Data on communication and educational facilities and also on the administrational set-up of the towns, in 1961, were obtained from the District census handbooks of the districts of Andhra Pradesh.

Analysis

Table 1 shows the role of small towns in the process of urbanisation in India. In 1961, out of a total of 2,699 towns, 1935 were small towns (71.69%). In 1971, there were 1964 small towns out of a total of 2921 (67.24%). Table 1 indicates that in all cases except Assam, both the small towns as a percentage of total towns and the populations in small towns as percentages of total urban populations had declined. The decline was particularly remarkable in Kerala, Orissa, Andhra Pradesh and Bihar. About one-fifth of the urban population of India lives in small towns. But in West Bengal, Maharashtra and Kerala, the percentage was much less than the all India average in 1971. The opposite was the case with Assam and Orissa which had more than 44% and 30% populations respectively. Among the more industrialised States, Tamil Nadu, Punjab and Mysore had more than a fifth of their urban populations residing in small towns.

Table 2 compares the increase in the number of big towns (class-I, II, III)* with that of small towns (class-IV, V, VI).* The number of

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* Class I : 1,00,000 and above population
Class II : 50,000-99 999 population
Class III : 20,000-49,999 population
Class IV : 10,000 to 19,999 population
Class V : 5,000-9,999 population
Class VI : Below 5,000 population

TABLE 1

Role of small towns in India's urbanization (1961 *and* 1971)

	Total number of small towns		Small towns as a percentage of total number of towns		Variation (1961-71)	Population in small towns as a percentage of urban population		Variation (1961-71)
	1961	1971	1961	1971		1961	1971	
Andhra Pradesh	152	117	68.16	56.52	—11.64	25.48	16.98	— 8.50
Assam *	47	67	73.33	79.76	+ 6.43	42.78	44.10	+ 1.32
Bihar	106	99	69.28	61.49	— 7.79	28.64	19.60	— 8.81
Gujarat	123	148	67.96	68.20	+ 0.24	22.82	20.97	— 1.85
Jammu & Kashmir	40	40	93.02	88.89	— 4.13	31.05	24.03	— 7.02
Kerala	52	36	56.52	40.91	—15.61	23.55	12 53	—11.02
Madhya Pradesh	172	181	78.54	74 79	— 3.75	33.21	25.97	— 7.24
Maharashtra	192	182	72.18	62.98	— 9.20	17.35	12.47	— 4.88
Mysore	182	171	78.79	74.02	— 4.77	32.28	25.35	— 6.93
Orissa	50	55	80.65	68.75	—11.90	45.99	30.53	—15.46
Punjab **	137	114	72.49	65 51	— 6 98	26.62	21.20	— 5.42
Rajasthan	112	113	77.24	71.97	— 5.27	34.48	28.65	— 5.83
Tamil Nadu	250	320	73.75	72.23	— 1.52	27.24	21.77	— 5.47
Uttar Pradesh	176	184	65.92	62.80	— 3.12	18.51	15.42	— 3.09
West Bengal	107	79	58.15	57.66	— 0.49	12.58	7.66	— 4.92
Union Territories & other areas	37	58	82.22	79.45	— 2 77	8.41	7.28	— 1.13
India	1935	1964	71.69	67.24	— 4.45	23.47	18.08	— 5.39

Sources : 1. Census of India—1961, Vol. 1, Part II-A(1), General population tables
2. Census of India—1971, paper 1 of 1971—Supplement, Provisional Population Tables

Note : * 1971 figures include figures for Assam, Meghalaya and Arunachal Pradesh to make it comparable to 1961 figure of Assam.
** 1971 figures include figures fo: Punjab, Haryana and Chandigarh to make it comparable to 1961 figure of Punjab.

TABLE 2

Number of big towns and small towns (1961-1971)

	Total number of big towns		Variation (1961-71)	Total number of small towns		Variation (1961-71)
	1961	1971		1971	1961	
Andhra Pradesh	71	90	+19	152	117	—35
Assam*	13	17	+ 4	47	67	+20
Bihar	47	62	+15	106	99	— 7
Gujarat	58	69	+11	123	148	+25
Jammu & Kashmir	3	5	+ 2	40	40	0
Kerala	40	52	+12	52	36	—16
Madhya Pradesh	47	61	+14	172	181	+ 9
Maharashtra	74	107	+33	192	182	—10
Mysore	49	60	+11	182	171	—11
Orissa	12	25	+13	50	55	+ 5
Punjab**	52	60	+ 8	137	114	—23
Rajasthan	33	44	+11	112	113	+ 1
Tamil Nadu	89	123	+34	250	320	+70
Uttar Pradesh	91	109	+18	176	184	+ 8
West Bengal	77	58	—19	107	79	—28
Union Territories and other areas	8	15	+ 7	37	58	+21
India	764	957	+193	1935	1964	+29

Sources 1 Census of India—1961, Vol I, Part II-A(1), General Population Tables.
2 Census of India—1971, Paper 1 of 1971-Supplement, Provisional Population Totals

Note : * Same as for Table 1.
** Same as for Table 1

Note · Big towns include towns of size classes I, II, and III

big towns increased in all States except West Bengal. The increase was remarkable in Tamil Nadu and Maharashtra. On the contrary, the number of small towns declined in seven States and increased in another seven States, Union Territories and other areas. The increase in small towns was more prominent in Tamil Nadu while the decline was more prominent in Andhra Pradesh.

Table 3 compares the growth rates of population in all the six size classes for the two decades 1951-61 and 1961-71. The growth rates of the first three classes were higher than for small towns (i.e. class IV, V, VI) in both decades. However, this table throws light on one important aspect. Though they share a lower percentage of the urban

TABLE 3

Pattern of urban growth—All classes by size-classes 1951-61, 1961-71

Class	Growth rate	
	1951-61	1961-71
Class I	+44.47	+49.35
Class II	+39.26	+40 86
Class III	+40 14	+26.10
Class IV	+18.23	+27.30
Class V	—30 07	— 0.09
Class VI	—62 30	+16 18
All Classes	+26.41	+37.83

Source Census of India 1971, Paper 1 of 1971—Supplement, Provisional Population Tables

population, and though they are growing less rapidly than bigger towns, they are growing faster in this decade as compared to 1951-61 (cols. 2 & 3 for classes IV, V, VI). In fact, the negative growth rate observed in class VI towns during 1951-61 became positive during 1961-71. A negative growth rate during 1951-1961 could be attributed to the adoption of a vigorous definition of urban areas in the 1961 census, which led to the declassification of many marginal towns. There was no such definitional change in the 1971 census.

The total population in small towns increased by 6.13% during 1961-1971. But, a great deal of variation between the percentage growth during 1961-1971 of various small towns was observed. As shown in Table 4, small towns were divided into five categories according to the range of their growth during 1961-1971.

(1)	Rapidly declining	-50 to -80
(2)	Slowly declining	-10 to -50
(3)	Stagnant	0 to 10 & 0 to -10
(4)	Slowly increasing	10 to 50, and
(5)	Rapidly increasing	50 to 240

The majority of the towns were in the category of slowly increasing towns and shared 65.08% of the total population of small towns. Fifty-two small towns were declining towns and about 2% of the population of small towns lived in them. About 6% of the population of small towns lived in 140 towns which were almost stagnant. About 10% of the population of small towns lived in 179 towns which had grown very rapidly during 1961-1971. Column 5 of Table 4 gives the population in these five categories as a percentage of total urban

TABLE 4.
Pattern of growth, 1961-71

	Growth rate 1961-71 range	Number of small towns	Small towns population in thousands(4)	(4) as percentage of total urban population	(4) as percentage of total population of small towns
1. Rapidly declining	-50 to -80	13	73	0.07	0.37
2. Slowly declining	-10 to -50	39	325	0.30	1.65
3. Stagnant	0 to -10 and 0-10	140	1299	1.20	6.61
4. Slowly increasing	10-50	1107	12796	11.76	65.08
5. Rapidly increasing	50-240	179	1979	1.82	10.07
		1478			

Source : Census of India 1961, Paper 1 of 19671—Supplement, Provisional Population Totals.
Note : 1. Total urban population is 10,87,87,082
2 Total Population of Small Towns is 1,96,62,031
3. Total number of small towns is 1,964 However this task if confined to 1,478 towns, for which growth rates during 1961-71 are available. There are 485 new towns treated as such for the first time in 1971 for which growth rate is not available and for one town (Kagaznagar in Andhra Pradesh) growth rate is not available since the area for this in 1961 is not available.

population and shows that except category IV, all others shared an insignificant percentage of the total urban population.

Tiny Towns and New Towns

Tiny towns (towns in size class VI) and new towns (areas which are included as towns for the first time in 1971) constitute a significant link in the rural-urban relationship. As the development of small towns will help in the decentralisation process, it is necessary to examine the place of tiny towns and new towns in the whole process, and also to identify the areas or States where there is a remarkable increase in the number of such towns.

Tables 5 and 6 show that the position of Tamil Nadu is unique in this respect. During 1961-1971 it had recorded a very high increase in the number of small towns as compared to the rest of the States of India and 155 new towns have emerged out of which 86 are in the tiny towns category.

TABLE 5

Distribution of tiny towns and other small towns

	Size	Class IV and V	Variation	Size	Class VI	Variation
	1961	1971	(1961-71)	1961	1971	(1961-71)
Andhra Pradesh	145	112	—33	7	5	— 2
*Assam	36	55	+19	11	12	+ 1
Bihar	98	92	— 6	8	7	— 1
Gujarat	114	139	+25	9	9	0
Jammu and Kashmir	10	20	+10	30	20	—10
Kerala	51	34	—17	1	2	+ 1
Madhya Pradesh	155	169	+14	17	12	— 5
Maharashtra	177	168	— 9	15	14	— 1
Mysore	145	145	0	37	26	—11
Orissa	47	53	+ 6	3	2	— 1
**Punjab	94	97	+ 3	43	17	—26
Rajasthan	103	109	+ 6	9	4	— 5
Tamil Nadu	214	217	+ 3	36	103	+67
Uttar Pradesh	160	171	+11	16	13	— 3
West Bengal	95	76	—19	12	3	— 9
Union of Territories and other areas	23	30	+ 7	14	28	+14
India	1,667	1,687	+20	268	277	+ 9

Sources 1 Census of India, 1961, Vol I, Part II-A(i), General Population Tables.
2 Census of India, 1971, Paper 1 of 1971 Supplement, Provisional Population Totals

Note : * * * Same as for Table 1

TABLE 6

Distribution of new towns by size classes

	New towns in 1971 in size Class			Total
	IV	V	VI	
Andhra Pradesh	7	14	5	26
*Assam	5	12	6	23
Bihar	9	16	3	28
Gujarat	6	33	6	45
Jammu & Kashmir	0	2	5	7
Kerala	8	5	1	14
Madhya Pradesh	2	24	5	31
Maharashtra	3	10	8	21
Mysore	14	4	5	23
Orissa	3	15	0	18
**Punjab	1	5	0	6
Rajasthan	6	6	0	12
Tamil Nadu	17	52	86	155
Uttar Pradesh	10	30	7	47
West Bengal	3	12	0	15
Union Territories & other areas	0	5	9	14
India	94	245	146	485

Source · Census of India, 1971, Paper 1 of 1971—Supplement, Provisional Population Totals.
Note · * Same as for Table 1
** Same as for Table 1.

In all the States except Tamil Nadu, the number of tiny towns decreased or remained constant, while the number of other small towns increased in most States. Only in Andhra Pradesh, Bihar, Maharashtra and Bengal, both the number of tiny towns as well as of other small towns declined. Gujarat and Uttar Pradesh were the other two States, except Tamil Nadu, where a remarkable number of new towns have emerged. In Punjab only six towns were added during 1961-1971.

Factors Affecting the Growth of Towns

An analysis of the factors affecting the growth of towns for rapidly growing, stagnant and declining towns in Andhra Pradesh (Table 7) revealed that out of nine rapidly growing towns, Tirumali recorded the highest population growth (more than 130%). The most important factor for its rapid growth lay in the fact that it is a very famous pilgrim centre of India and attracts quite a large number of pilgrims from different parts of the country every year. Similarly, Bhadrachalam is also a well known pilgrim centre and also recorded a significantly high population growth. There was no single factor which could be held responsible for a higher growth rate of the seven remaining towns. The location of Taluka Headquarters in seven of the nine towns appears to be another important factor affecting the population growth of these towns. Similarly, six towns in this group had service as the main and sub-functions. Of the remaining three towns, Yellanadu had manufacturing as its dominant function and mining as a sub-function. The impact of its mining function can be easily seen from the decadal variation in population growth; during 1951-61, the population declined but increased significantly during the following decade. Of the remaining two manufacturing towns, Metpalli had artisanry as a sub-function, and Koratla had manufacturing as a sub-function. Educational facilities in most of these towns could be cited as factors contributing to higher population growth because seven such towns had facilities for technical education apart from primary and secondary schools. The communication facilities such as post and telegraph offices, roads and railways, rest houses etc. did not have any significant association with the population growth of these towns.

Stagnant and Declining Towns

The population of five towns in Andhra Pradesh was almost stagnant, i.e., the rate of growth of population in these towns was between 2-10% during 1961-1971. Three towns in this group had a nominal decline in population during the previous decade, 1951-1961, but the position improved and they gained population during the later decade as contrary to the two remaining towns where the growth rate declined during 1961-1971 as against the growth rate of the previous decade. Three towns in this group had manufacturing as their main function and artisanry as a sub-function while one was a trading town and another a service town. Further, four of the five towns were linked by railways with other places and only one had facilities of technical education while others had primary and secondary schools. Venkatagiri and Sompeta towns in this group were the taluka places while the other three towns were parts of other talukas. Thus, it could be said that the functional base of these towns in relation to railway links and the absence of institutions for technical education appear to be important factors for the stagnation of population in these towns.

TABLE 7

Rapidly growing, stagnant and declining towns in Andhra Pradesh and probable factors affecting their population growth

Name of the town	Name of the district	Per cent population change during		Population 1971	Whether taluk place	Functional base of town		Other factors	
		1961-71	1951-61			Main function	Sub-function	Communication facilities	Educational facilities
		RAPIDLY		INCREASING			TOWNS		
Tirumali	Chittoor	+131.18	N.A.	12856	—	Service	Service	Po, R, Rh	2P
Miryalguda	Nalgonda	+ 92.19	+13.90	19265	X	,,	,,	Po, To, R, Rh	5P, M, H, T
Bhadrachalam	Khammam	+ 86.57	N.A.	10709	X	,,	,,	Po, To, 9Rh	3P, H, T
Sangareddy	Medak	+ 76.81	+20.76	17260	X	,,	,,	Po, To, R, Rh	2P, H, T
Kamareddy	Nizamabad	+ 72.87	+31.79	17837	X	,,	,,	Po, To, R, Rly Rh	4P, M, H, T
Metpalli	Karimnagar	+ 67.39	+26.07	13160	X	Manufacturing	Artisan	Po, R	2P, M, H
Yellandu	Khammam	+ 53.02	—21.35	16763	X	,,	Mining	Po, R, 2Rh, Rly	4P, M, H, T
Nandigama	Krishna	+ 50.71	N.A.	15439	X	Service	Service	Po, To, R, 2Rh	3P, H, T
Koratla	Karimnagar	+ 50.19	+31.15	17692	—	Manufacturing	Manufacturing	Po, To, R, 4Rh	4P, 3H, T
				STAGNANT	TOWNS				
Sompeta	Srikakulam	+ 9.93	+10.78	11639	X	Service	Service	Po, To, R, Rly, Rh	5P, H
Mandosa	Srikakulam	+ 6.34	+ 9.60	6628	—	Manufacturing	Artisan	Po, To, R, Rly	3P, H

Table 7 contd.

Name of the town	Name of the district	Per cent population change during		Population 1971	Whether taluk place	Functional base of town		Other factors	
		1951-61	1961-71			Main function	Sub-function	Communi-cation facilities	Educational facilities
				STAGNANT TOWNS					
Cumbum	Ongole	+ 4.72	— 1.94	9744	—	Trade & Transport	Trading	Po, To, R, 5Rh, Rly	2P, H
Venkatagiri	Nellore	+ 2.53	— 1.51	17547	X	Manufacturing	Artisan	Po, To, R, Rly, 2Rh	12P, 2H, T
Kosigi	Mahabub-nagar	+ 2.20	— 0.95	9018	—	„	Artisan	Po, R, Rh	2P, H
				DECLINING TOWNS					
Vijaypuri (South)	Guntur	— 70.01	N.A.	5160	—	Manufacturing			
Vijaypuri (North)	Nalgonda	— 57.59	N.A	16158	—	„	Construction	Po, To, R, 4Rh	P, H
Chodavaram	Visaka-patnam	— 26.70	+ 7.69	10957	X	„	Plantation	Po, To, R, 2Rh	5P, M, H
Bhattiprolu	Guntur	— 23.75	+15.69	12671	—	„	Artisan	Po, To, R, Rly 3Rh	6P, H
Narsapatnam	Visakha-patnam	— 23.23	+29.17	17480	X	Service	Service	Po, To, R, 3Rh	P, H

Sources : 1. Census of India 1971, Paper 1 of 1971-Supplement, Provisional Population Totals 2 Census, 1961, Andhra Pradesh, District Census Handbooks. 3. A functional classification of India's Towns, Part II Inventory of Classified Towns (by Asok Mitra), All India Seminar on Population, 12-14th March, 1964.

Note : 1 N A. : Not available. 2 In column 6 X indicates Yes and — indicates No 3 Communication facilities are shown by the following symbols: Po : Post Office , To : Telegraph Office ; or Public Call Office ; Rh · Rest House and Chouttrus , R . Road , Rly : Railway.

4. Educational facilities are shown by the following symbols :
P : Primary school ; M · Middle School : H : High School ; T : Technical institution.

5. Vijayapuri town which was treated as a single town in Nalgonda district in the 1961 census has been treated as two separate towns in the 1971 census namely Vijayapuri South and Vijayapuri North

In five small towns in Andhra Pradesh there was a rapid decline of population ranging from 20-70%. Vijayapuri, South and North, recorded a drastic decline of 70.01% and 57.59% respectively during the decade. The only reason for the decline in these towns was perhaps their functional base. These towns are situated on the right and left banks of the Nagarjuna Sagar Dam and had construction work as a major function. The decline in population could therefore be associated with the decline in construction work. The remaining three towns which showed declining populations of 23% during 1961-1971 had functional bases of manufacturing, plantation, artisanry and services. Ghodavaram and Narsapatham in this group are situated in the district of Visakhapatnam, which city is growing very fast and hence possibly the outmigration from these towns might have been very high during the decade. The other town, Bhattiprolu, was an artisan town and it seems that the decline in economic activities in the artisan sector might have contributed to the decline of population in this town.

Summary and Conclusions

The foregoing analysis brings out the following facts:

1. There is a decline in the number as well as the population of small towns in most of the States in India.
2. The growth of small towns in different States is found to be very much lower as compared to the growth of big towns in India. The exception to this is Tamil Nadu where the growth of small towns is significantly higher than the growth of big towns. As contrary to this, there was a rapid decline in the number of small towns in Andhra Pradesh.
3. The small towns recorded a faster rate of growth of population during 1961-1971 as compared to 1951-1961. This phenomenon may be attributed to the change in the definition of urban areas in 1961, which resulted in the declassification of a large number of small towns at that time.
4. The classification of small towns according to their growth rates indicates that more than 60% of the small towns had a growth rate between 10% and 50%.
5. Growth and emergence of new towns and tiny towns is insignificant at an All India level. Among the different States, Tamil Nadu is the only State where quite a large number of new towns have emerged and tiny towns have increased.
6. The study of rapidly growing, stagnant and declining towns in Andhra Pradesh explicitly points out that there is no single factor which can be held responsible for the growth or decline of the

population of small towns. However, it can be observed that the location of Taluka Headquarters along with other factors such as religious centres, facilities of technical education etc. were important factors contributing to the rapid growth of population in these small towns. As contrary to this, the functional nature of the town appeared to be a more important factor for stagnation and decline in the population of small towns. As contrary to the rapidly growing towns, these stagnant and declining towns (except one town) did not have facilities for technical education and this might have hampered the population growth of these small towns. Further, the presence of rail links among most of the stagnating towns indicates a higher probability of outmigration from these towns.

Thus, the present study can be concluded with the remark that the small towns in India are very slow growing. Further it appears that there are numerous factors affecting the growth of these small towns as high-lighted in the case study and these factors must be studied in greater detail with reference to the whole of the country.

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ATTITUDES OF NEWLY MARRIED MALES IN PATNA TOWARDS FAMILY FORMATION—A PILOT STUDY*

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India is one among several other countries of the world which has adopted a policy in favour of family planning. The aim is to reduce the rate of population growth as early as possible. To achieve this, the government and several voluntary agencies have launched specific programmes which aim at covering all fertile couples in the country. In such a situation it was of interest to know the opinions regarding desired family size and the use of contraceptives by newly married couples. The present study, a pilot one in nature, was designed to obtain the desired family size and awareness and use of contraceptive methods by newly married males in Patna.

Methodology

Under the supervision of the staff of the Demographic Research Centre, the final year post-graduate students of the Department of Statistics, Patna University, conducted the field enquiry from December 1971 to February 1972. All those married within two years preceding the date of survey constituted the population of newly married males. No sampling frame could be obtained for such a population. At the same time it was desirable that the samples must have a wide representation. To achieve this, students were assigned different areas of the city and each one was required to interview 30-35 newly married males in that area. The present report is based on the information supplied by 991 newly married males in Patna.

Selected Characteristics of Respondents and their Wives

Age distribution

Summary measures for age distribution of the respondents and their wives are given in Table 1. It was observed that the average age of the respondents was 24.22 years, the standard deviation being 3.3 years. A fourth of the respondents were below 21, whereas half of

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* The work was carried out at the Demographic Research Centre, Patna University, Patna, India, and had no connection with the author's present assignment. The detailed report is available in mimeographed form

TABLE 1

Some characteristics of age distributions of respondents and their wives

Characteristic	Age distribution of	
	Respondents	Wives
Mean	24.22 Years	19.09 Years
Median	23.86 „	18.73 „
Mode	22.71 „	18.35 „
First Quartile	21.08 „	16.37 „
Third Quartile	24.95 „	19.53 „
Standard Deviation	3.30 „	2.54 „
Coefficient of Variation (Percentage)	13.62 „	13.30

them were between 24-25 years. The mean and the standard deviation of the age distribution of the wives of the respondents were respectively 19.09 and 2.54 years. The variabilities of age distributions with respect to means were similar. Also, each age distribution was positively skewed, as indicated by the positive difference between the mean and the mode of each distribution.

Age at marriage

The average ages at marriage of the respondents and their wives were respectively 22.99 and 17.81 years. The respective standard deviations were 3.30 and 2.86 years. Thus, we note a somewhat greater concentration of ages at marriage for females than for males. A comparison of average ages at the time of the survey and those at the time of marriage shows that on the average, by the time of the survey, the respondents had been married for about 1.25 years. The modal ages of marriage for males and females were respectively about 22 and 17 years. Fifty per cent of the respondents were married before reaching an age of 22.6 years. In the case of their wives, this age was 17.5 years. Thus on an average, the respondents were five years older than their wives.

The correlation coefficient between the ages at marriage of the respondents and their wives (0.67) indicated a highly positive association between the two. The regression lines connecting the two ages at marriage were

$$y = 0.921x + 6.548 \text{ and}$$
$$x = 0.485y + 6.403$$

where y and x respectively represent ages at marriage of the respondent and his wife. The standard errors of the estimate of y from x and of x from y were 2.45 and 1.78 years respectively.

Literacy/Education

The sample contained a negligible number of respondents (13 of 991 i.e., 1.31%) who were illiterate. On the other hand, 6.56% of the wives belonged to this category. The largest number of respondents and their wives were respectively, educated upto graduate and middle levels. Each of these categories included almost a third of the total numbers involved. Further, among 84.06% of the couples, the husband's educational level was higher than that of the wife. About 13.71% of the couples had the same literacy/educational level. Also, the wives had rarely attained an educational level beyond graduation and very few had got beyond matriculation.

Religion

A majority of the respondents (86.9%) were Hindus. They were followed by Muslims who constituted 11.7% of the sample, the remaining being Christians and Sikhs.

Occupation

A distribution of the respondents according to their occupation revealed that slightly more than one-third belonged to the service class. A somewhat similar percentage of respondents were students. One in every ten was a businessman whereas the percentage of unemployed to total respondents was 7.67. These four categories contained 91.12% of the respondents. Some of the other occupations included labourers, doctors, engineers, lawyers, teachers, and cultivators, the respective percentages being 0.61, 0.71, 0.20, 1.61, 1.71, and 0.61.

Income

Of the 991 respondents, 936 answered the questions pertaining to their monthly income. Of the latter group, 530 had some income at the time of the survey. It was noted that a fourth of the respondents with some monthly income earned Rs. 200-299 whereas about one-half of them earned more than Rs. 300.

Pregnancy and fertility at the time of survey

The information about the number of children born and whether the wife was pregnant at the time of survey were obtained from 967, i.e., 97.58 per cent of the total respondents. It was noted that one-fourth of the wives consisted of 7.13 per cent pregnant and 17.80 per cent non-pregnant mothers. The ratio of sons to daughters born to these mothers was 62.38. About 43% of the 172 births and 50% all the pregnancies reported were unplanned. It appears that if these married couples were given education in family planning, these unplanned births and pregnancies could have been postponed until a later date.

Opinion on Marriage and Family Size

In a society where illegitimate births are denounced, the age at marriage plays an important role in determining the level and age pattern of fertility. It is known that a rise in the age at marriage leads to some reduction in the level of fertility in a population. With a view to assessing the possibility of a rise in the age at marriage in the future, the respondents were asked to give their opinion on the appropriateness of their ages at marriage. They were also asked to give reasons for their opinions.

Of 991 respondents, 988 answered this question. Of these, 66.1% considered that they had married at an appropriate age, 30% that they had married earlier than they should have been and the remainder that they had married at a somewhat later age. In the second category, the guardians and household conditions were found to exert great pressure on the settlement of marriages, these being mentioned as the reasons by 88% of the respondents. In about two-thirds of the cases, it was the pressure of the guardian that led to the marriage. It appears that as the guardians become more and more understanding, the age at marriage of the males may rise in the future. The values of the selected characteristics of distribution of age at marriage of the three groups of respondents as given in Table 2 shows that as the opinions of the respondents on the appropriateness of the age at marriage changed from an earlier to a later pattern; the average age at marriage rose from 21.29 to 28.06 years. A similar trend was revealed by the average age at marriage of the wives of the respondents in that the differences between the average age at marriage of the respondents and their wives increased from 4.30 to 8.14 years. This suggests that a shift in the age at marriage of males in Indian society may not be accompanied with a parallel shift in the age at marriage of females.

Sex preference and desired number of children

The distribution of respondents according to the number of sons and daughters desired by Hindu and Muslim respondents are respectively given in Tables 3 and 4. Of the 970 respondents who speci-

TABLE 2

Some characteristics of distribution by age at marriage and respondents' opinion about it

Characteristic	Age at marriage considered		
	Earlier	Appropriate	Later
	Respondents		
Mean	21.29 Years	23.46 Years	28.06 Years
Standard deviation	2.52 „	3.03 „	4.07 „
First Quartile	20.07 „	21.31 „	26.11 „
Median	21.47 „	23.20 „	27.70 „
Third Quartile	22.66 „	25.41 „	31.13 „
	Wives of respondents		
Mean	16.99 Years	18.06 Years	19.92 Years
Standard deviation	2.04 „	2.37 „	3.11 „
First Quartile	15.72 „	16.39 „	18.25 „
Median	16.90 „	17.68 „	20.13 „
Third Quartile	18.16 „	19.47 „	21.83 „

fied their desire, four-fifths preferred to have only one daughter and 31.4 % and 56.9% respectively wanted one and two sons. About a half of the respondents desired to have two sons and a daughter. Further, about two-thirds of the respondents wanted more sons than daughters. The average numbers of sons and daughters desired were respectively 1.8 and 1.0.

Tables 3 and 4 reveal that about 66% of the Hindu respondents wanted more sons than daughters whereas 73% of the Muslim

TABLE 3

Distribution of Hindu respondents by number of sons and daughters desired

Number of daughters desired	Number of sons desired						Total
	0	1	2	3	4+	No response	
0	2	32	37	8	—	—	79
1	5	236	418	28	8	—	695
2	—	8	33	16	8	—	65
3	—	2	—	2	1	—	5
4+	—	—	—	—	3	—	3
No response	—	—	—	—	—	12	12
Total	7	278	488	54	20	12	859

TABLE 4

Distribution of Muslim respondents by number of sons and daughters desired

Number of daughters desired	Number of sons desired						Total
	0	1	2	3	4+	No response	
0	1	2	1	—	—	—	4
1	—	17	48	9	2	—	76
2	—	1	9	7	5	—	22
3	—	—	—	—	1	—	1
4+	—	—	—	—	6	—	6
No response	—	—	—	—	—	7	7
Total	1	20	58	16	14	7	116

respondents expressed a similar desire. About one-third of the Hindus and one-fourth of the Muslim respondents wanted to have equal numbers of sons and daughters. It may be obtained that the Muslims thus seemed to show a somewhat greater preference for sons than Hindus. The respective averages were 2.24 and 1.76. On the average, the family size desired by Muslims (3.36) was slightly higher than that desired by Hindus (2.76).

Literacy/Education and number of children desired

Table 5 shows the distribution of respondents according to literacy/education and the number of children desired. The association between the literacy/education of the respondents on the one hand and the number of children desired on the other was poor. The concentration of opinions ranged from 2-4 children for the respondents belonging to each literary/educational category. However, the average number of children desired per respondent indicated a slight downward trend with a rise in literacy/education of the respondents.

Income and number of children desired

Table 6 suggests that the relationship between income and number of children desired is almost similar to that between education and the number of children desired. The average number of children desired per respondent declined as the monthly income rose but any precipitous decline occurred only after this income crossed a limit of Rs. 500.

TABLE 5

Distribution of respondents by literacy/education and number of children desired

Literacy/Education	Number of children desired							Total	Average**
	0	1	2	3	4	5+	NR		
Illiterate	—	—	1	7	3	1	1	13	3.58
Literate	—	—	4	3	5	1	—	13	3.31
Middle	—	4	11	38	17	3	7	80	3.05
Matriculation	2	6	46	91	6	9	—	160	2.79
Intermediate	—	8	56	96	14	10	4	188	2.80
Graduate	1	14	112	157	32	13	6	335	2.78
Post-Graduate	—	6	37	58	2	12	1	116	2.82
Engineering	—	—	4	11	1	1	—	17	2.94
Medical	—	—	6	4	—	—	—	10	2.40
Law	—	—	15	14	1	5	—	35	3.00
Others	—	1	7	11	1	3	—	23	2.91
Unspecified	—	—	—	—	—	1	—	1	***
Total	3	39	290	490	82	59	19	991	2.94

* No response

** Calculated from detailed distribution after ignoring the "No responses"

*** Not calculated

TABLE 6

Distribution of gainfully employed respondents by monthly income and number of children desired

Income per month (Rs	Number of children desired					5+	NR*	Total	Average**
100	—	1	7	14	8	1	1	32	3.03
100-199	—	1	72	9	7	5	4	98	2.46
200-299	—	5	41	72	11	3	4	136	2.72
300-399	1	4	28	48	8	4	3	96	2.75
400-499	—	2	36	33	3	10	1	85	2.76
500-599	—	2	14	21	1	3	1	42	2.76
600-699	—	8	5	10	—	2	1	26	2.09
700-999	—	1	5	1	—	—	—	7	2.00
1000+	—	1	7	—	—	—	—	8	1.88
Total	—	25	215	208	38	28	15	530	2.65

* No response.

** Calculated from detailed distribution after ignoring the "No responses".

Sex preference and ultimate family size

In order to know whether respondents would be rigid in their desire for specific sex composition of children, they were asked about their intentions of continuing to have children until the desired size was attained. The data indicate that slightly more than three-fourths of the respondents did not favour large families even if they failed to achieve the desired sex composition of children. This implies that newly married males do possess some motivation in favour of small families. This has to be sustained, activated and brought into practice through proper education of newly married men in the society.

Family Planning

The accelerated rate of population growth in the recent past and the retarded social and economic development in several countries of the world has made it almost imperative that birth rates in such populations be reduced without delay. This is so because no one would welcome a rise in the death rate in any population. A reduction in the birth rate is possible through the wide and effective use of contraceptive methods. In most of the developing countries and in India particularly, the experience shows that contraceptives are generally adopted by fertile couples after getting a few children. Unless these methods are terminal, the couples do get some children as a result of contraceptive failure or weak motivation in favour of family planning. It is posited here that if couples are advised from the beginning of their conjugal life about the importance of postponing and limiting the family, the family planning programme may attain greater success than achieved so far.

Awareness of contraceptive methods

The distribution of respondents according to their awareness of various methods of contraception is given in Table 7. Since one respondent could be aware of more than one method, he could appear in more than one place and hence the frequencies in Table 7 are not additive. The percentages relate to the total number of respondents. It may be noted that the condom was known to the largest number (58.4%) of respondents. This was followed by the IUD—(50%). Also, about 25% of the respondents were aware of the contraceptive pills whereas 20-21% each were aware of the jelly and foam tablets. It is surprising that the much advertised vasectomy was known to less than one-fifth of the respondents.

TABLE 7

Distribution of respondents by their awareness of various methods of contraception

Methods of contraception	Number of respondents aware of the method	Percentage of the total
Condom	579	58.42
I.U.C.D.	497	50.15
Diaphragm	35	3.53
Jelly	203	20.48
Oran pills	249	25.12
Foam tablets	213	21.49
Rhythm	48	4.84
Abstinence	93	9.38
Tubectomy	169	17.05
Vasectomy	178	17.96
Others	75	7.57

Use of contraceptive methods

Table 8 gives the distribution of respondents according to religion and regularity of use of contraceptive methods. It may be noted that about one-third were using a contraceptive method. Regular users, however, were slightly fewer than irregular users. The percentage of respondents using a method of family planning to total respondents among Hindus was greater than among Muslims. The respective percentages were 35.33 and 23.27. The former percentage has been obtained after ignoring the no response cases. It was further observed that the condom was the most popular method. This is understandable for the group of respondents interviewed.

TABLE 8

Distribution of respondents by religion and regularity of use of contraceptive methods

Religion	Non-users	Users		Sub-Total	No response	Total
		Regular	Irregular			
Hindus	538	143	151	294	29	861
Muslims	89	10	17	27	—	116
Others	11	3	—	3	—	14
Total	638	156	168	324	29	991

Prospects for permanent methods of contraception

It has been observed that about three-fourths of the respondents were willing to adopt a permanent method of contraception once they achieved the desired family size. However, the need to educate these newly married males is strongly indicated so that this willingness is sustained and family limitation really becomes effective in future. This also implies a great demand for terminal methods of contraception from fertile couples in the future.

Observations and Remarks

The present pilot study although limited in scope and inadequate for any generalisation has revealed many interesting patterns that promise increased participation by newly married couples in the family planning programme. It has been observed that many respondents had married at an age earlier than they should have and also married while they were students. The pressure of guardians and household conditions appears to exert an appreciable influence on the decision of the age at marriage in such cases. If such males would begin to postpone their marriages until they are settled in life and the guardians would become more considerate, the age at marriage in India may possibly go up in the future. This upward shift is likely to be associated with a similar shift, though not necessarily one of the same magnitude, in the age at marriage of females.

The high incidence of unplanned births and pregnancies experienced by the wives of respondents indicates the necessity for organising intensive educational programmes of family planning so that young married couples can plan their families. These intensive programmes are also necessary because in spite of the desire for having more sons than daughters, these young couples were prepared to accept permanent methods of family planning and are not desirous of having large families. This attitude can be sustained only through intensive educational programmes which may in addition bring about larger participation and convert irregular users of family planning methods to regular users.

ANALYSIS OF ACCEPTORS OF MEDICAL TERMINATION OF PREGNANCIES IN MAHARASHTRA

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Introduction

Induced abortion whether practised with legal and social sanctions or otherwise is a universal phenomenon and can be traced as far back as recorded history. It is difficult to assess the exact extent of illegal abortions for obvious reasons. But, according to one estimate five millions abortions were performed in India every year as against 21 million live births. Maternal mortality as a result of such abortions was believed to be as high as 2,00,000 every year. Morbidity associated with illegal abortion is expected to be much higher. Although this dismal state of affairs was known, no effective steps were taken to check the abortion racket.

The Central Family Planning Board in its sixteenth meeting held in August 1964, expressed anxiety on the reported increase in the number of induced abortions under insanitary conditions thereby affecting the health and life of the mother. In view of the complex nature of the problem, the Board recommended that a Committee be formed to examine this position. In pursuance of this recommendation a high-powered Committee headed by Shri Shantilal Shah, the then Minister of Health, Law and Judiciary, Government of Maharashtra, as its Chairman, was set up by the Government of India.

The Government of India accepted the recommendations of this Committee and brought forward legislation leading to the enactment of the Medical Termination of Pregnancy Act (1971), and India thus joined 25 other countries in the world, which had passed similar legislation for the welfare of its people, particularly for the welfare of women.

The Medical Termination of Pregnancy (MTP) Act is a health measure of great importance for reducing morbidity and mortality in pregnant women seeking abortion. Prima facie, the Act does not appear to have any direct bearing on the population control programme except that it liberalises the indications for abortion when conception has been caused by the failure of a contraceptive device. But there can be no denial of the fact that the statute has added a new dimension to the family planning programme in India.

Maharashtra State has the distinction of being first in India, in the field of MTPs. As against 1300 to 1400 institutions approved, since the enactment of this Act, for doing such work in the whole of India, as many as 339 institutions are located in Maharashtra. Similarly, 46,858 pregnancies have been terminated since 1st April 1972 to 30th June 1975, as against over a lakh and eighty thousand of such terminations in the whole of India as of 30th June 1975.

Materials and method

In order to find out ways to improve this programme, it was decided to undertake a study of the 46.858 acceptors of MTP in Maharashtra, during the abovementioned period, accordingly, a study was planned with the help of the International Institute for Population Studies, Bombay. This detailed study is in progress and is likely to be completed within the next three to four months.

The Directorate of Health Services collects monthly consolidated information in a Summary Report (Appendix A) from institutions carrying out medical pregnancy terminations. Based on the information furnished in the Summary Report, a preliminary report of the work done under the MTP Act in Maharashtra was prepared. The analysis of data is therefore restricted to a broader outline of the programme. The detailed analysis of data which is under way will give greater insight into the programme. Nevertheless, the present paper, though based on a preliminary analysis, as will be seen from the ensuing presentation, brings to light many interesting and valuable points.

Results

The Medical Termination of Pregnancy Act came into force with effect from 1st April 1972. Since then, the monthly average of such terminations performed in the State has gone up from 474 to 2264 per month. This marks a substantial progress and indicates that more and more women are undergoing MTPs in recognised institutions (Table 1).

Over 70% of the institutions approved for MTP are private institutions. Most of the Government and local institutions where MTP facilities are available, have already been approved for carrying out the operation (Table 2).

TABLE 1

Progress of medical terminations of pregnancy, Maharashtra

Period	No of MTPs performed	Monthly average
1.4.72 to 31.12.72	4,272	474
1.1.73 to 31.12.73	12,108	1,009
1.1.74 to 31.12.74	16,894	1,408
1.1.75 to 30. 6.75	13,584	2,264
Total	46,858	1,201

Out of a total of 26,000 doctors registered under the Medical Council of India and practising in Maharashtra, only 811 doctors have been approved for doing MTP. In 1972 (1.4.1972 onwards) there were 349 doctors who had registered for doing the operation. In 1973, another 193 were granted registration; in 1974, 181 more doctors were granted approval, and in 1975 (upto 30.6.75) 88 had been recognised for doing such work. Due care has been taken to approve only qualified, experienced and trained doctors.

TABLE 2

Categories of approved institutions for MTP

Period	Number of approved institutions				Total
		Local Body			
	Government	Municipal	Zilla Parishad†	Private	
1972 (x)	34	5	—	80	119
1973	13	24	—	53	90
1974	1	6	11	73	91
1975 +	1	3	—	35	39
Total	49	38	11	241	339

(x) 1 4 72 onwards
+ Upto 30 6 75
† These are institutions in rural areas.

Thus, since the inception of the Act, 339 institutions and 811 doctors have been recognised in the State to undertake Medical Termination of Pregnancies. However, 152 institutions and 383 doctors are in the city of Bombay. There is thus an immediate need to take this programme to mofussil areas and this calls for the training of doctors and the provision of facilities to undertake MTPs in existing peripheral institutions like cottage hospitals/rural hospitals, primary health centres (PHCs), private nursing homes, etc.

It is significant to note that 75% of the total MTPs done so far in Maharashtra have been performed in Bombay City alone (Table 3). More than 68% of the State's population lives in rural areas. Initially, as no facilities were provided in these areas, the rural population could not take advantage of this facility. As against 7.0% of the acceptors in the initial stage of the programme, 22.0% of the acceptors now come from rural areas. This progress is encouraging and again highlights the importance of providing facilities in peripheral institutions located in rural areas. Recently, ten PHCs and one Taluka Dispensary as shown in Appendix B, have been recognised for undertaking MTP work.

TABLE 3

Residential status of MTP acceptors

	1972 (10-4-72 onwards)	1973	1974	1975 (up to 30 6 75)	Total
Rural	283 (7)	950 (8)	1,765 (10)	2,927 (22)	5,925 (13)
Urban	3,383 (93)	11 518 (92)	15,129 (90)	10,657 (78)	40,933 (87)
Total	4,272 (100)	12,108 (100)	16,894 (100)	13,584 (100)	46,858 (100)

Figures in parentheses indicate percentages

TABLE 4

Yearwise terminations by marital status of women

Marital status	1972	1973	1974	1975	Total
Married	3,836 (90)	10,818 (88)	14,811 (88)	11,654 (86)	41,119 (88)
Single	354 (8)	1,050 (10)	1,733 (10)	1,646 (12)	4,783 (10)
Widowed	47 (1)	113 (1)	188 (1)	133 (1)	481 (1)
Separated	35 (1)	127 (1)	162 (1)	151 (1)	475 (1)
Total	4,272 (100)	12,108 (100)	16,894 (100)	13,584 (100)	46,858 (100)

Figures in parentheses represent percentages.

It is to be noted that single women are coming forward in larger numbers to avail of the facility provided. Their proportion has significantly gone up from 8% in 1972 to 12% in 1973. It is very likely that due to social attitudes single women ares still reluctant to take abortion services from recognised institutions. Possibly, illegal abortions in these groups are still being resorted to despite the high risk to the life of the mother.

In general, nearly 80% of the women in the sample came for a termination of pregnancy before 12 weeks of gestation. This calls for a programme to educate women to come for abortions in the first trimester of pregnancy in order to avoid complications. The number of women who underwent a MTP within 12 weeks of conception, as expressed in percentages of the total MTPs in that year, was 78% in 1972, 80.5% in 1973 and 80% each in 1974 and 1975. The corresponding percentages of those who underwent the operation between 12-20 weeks of conception wer 22, 19.5, 25 and 20 for the four respective years.

There is no appreciable change in the past three years so far as religionwise acceptance is concerned. However, Christians, even though they constitute 1.42% of the State's population, have accepted the programme and over 8% of the total acceptors are Christians. In the backward classes, i.e., Harijans, Neo Buddhists etc., who from the bulk of the group classified as others, the acceptance has been very poor (Table 5).

TABLE 5

Religionwise acceptance of MTP

Religion	1972	1973	1974	1975	Total	Percentage according to 1972 census
Hindu	3,432 (80)	9,920 (82)	13,941 (82)	11,150 (82)	38,443 (82)	81.94
Muslim	316 (10)	1,121 (9)	1,520 (9)	1,225 (9)	4,282 (9)	8.40
Christian	383 (9)	998 (8)	1,321 (8)	1,079 (8)	3,781 (8)	1.42
Others	41 (1)	69 (1)	112 (1)	130 (1)	354 (1)	8.24
Total	4,272 (100)	12,108 (100)	16,894 (100)	13,584 (100)	46,858 (100)	100

Figures in parentheses represent percentages.

Table 6 does not give any meaningful information, and we may have to wait for the completion of the final analysis when two way tables are prepared for a more meaningful interpretation.

In all 57% of the women underwent a MTP because of failure of contraceptives, which is a very significant point to note (Table 7). It is equally significant that 30% of the women who underwent the operation accepted sterilisation. The contemplated detailed analysis will throw up more information about the acceptance of family planning methods following MTPs.

TABLE 6

MTP acceptors according to number of existing male and female children

	Number of living children					Total
					4 & above	
Male	13,020 (28)	16,553 (35)	10,836 (23)	4,207 (9)	2,242 (5)	46,858 (100)
Female	10,760 (23)	11,263 (24)	11,692 (25)	6,866 (14.7)	6,277 (13.3)	46,858 (100)

Figures in parentheses indicate percentages

TABLE 7

Indications for terminations

Indication	Number of acceptors	Percentage
Danger to life of mother	697	1
Grave injury to physical health of pregnant woman	2,605	6
Grave injury to mental health of pregnant woman	4,784	10
Pregnancy caused by rape	675	1
Substantial risk of development of physical or mental abnormalities in a child	386	1
Failure of contraceptives	26,573	57
Environmental reasons	11,138	24
Total	46,858	100

By and large, educated women were found to be taking advantage of the programme. The data revealed that of the 42,586 MTP acceptors (figures for 1972 not being available), 21% were illiterate, 8% literate, 16% had had primary education, 20% had studied upto the middle school level, 38% upto the high school level and 7% had had university education. This is presumably due to the services being as yet restricted to urban areas. The picture is likely to change when these services are extended to cover rural areas.

Deaths following medical termination of pregnancy

Of the 46,858 terminations carried out in the State, 16 cases died after the procedure. The mortality works out to 34 deaths for 100,000 terminations. The details of 2 cases have not been received as yet while those of 14 cases are given below.

Procedure	Duration of pregnancy		Total
	12 weeks	12 to 20 weeks	
Intra-amniotic hypertonic saline	1	9	10
Abdominal hysterotomy	1	1	2
Suction curette	1	—	1
D & C	1	—	1
		10	14

It is evident from the above data that injections of intra-amniotic hypertonic saline are more hazardous than other methods. However, for want of details of the procedures adopted for performing the terminations in all the 46,858 cases, it would be difficult to assess the extent of risk involved in the various methods currently being practised. The data, however, confirm that risk to life due to MTP increases proportionately with the advancement of pregnancy.

SUMMARY

The Medical Termination of Pregnancy Act, which came into force from 1-4-1972 has liberalised abortions. In Maharashtra, 46,858 MTPs were performed between 1-4-1972 to 30-6-1975. A preliminary analysis of these 46,858 MTPs has been presented. The following are the salient points that have been emerged out of the data analysed :

(1) The average number of MTPs carried out in the State per month went up from 474 to 2264.

(2) Over 70% of the institutions approved for MTP are private institutions.

(3) In all, 339 institutions and 811 doctors have been recognised for doing MTP, since the Act came into effect upto 30-6-75. Nearly half of them practise in Bombay City. However, more and more peripheral institutions and doctors working in peripheral areas are being recognised.

(4) Significantly, 75% of the MTPs were performed in Bombay City.

(5) As against 7% of acceptors initially coming from rural areas, now, nearly 22% of the acceptors are rural based. So far, ten PHCs and one taluka dispensary have been recognised for doing MTP.

(6) Nearly 20% of the women came for a termination after 12 weeks of pregnancy. This emphasises the need for educating women to undergo MTPs early in pregnancy.

(7) There was no change in the religionwise acceptance of MTP over the past three years. However, the acceptance of MTP by Christians was substantially higher than their proportion in the population. On the contrary, acceptance of MTP by backward classes seemed to be very poor.

(8) No significant point emerged from the preliminary analysis of the data in regard to acceptors according to the number of existing female and male children.

(9) In all, 57% of the women underwent MTP because of failure of contraceptives, which is a very significant point to note.

(10) It is seen that 30% of the women undergoing MTP accepted sterilisation. The majority of the rest accepted other family planning methods.

(11) By and large, it is the educated women who are now taking advantage of the programme. Presumably, this is due to the services still largely being restricted to urban areas.

(12) Ten out of fourteen deaths resulted from MTPs done by injecting intra-amniotic hypertonic saline. As expected, the data revealed that the risk to the life of the mother due to MTP increases proportionately with the advancement of pregnancy.

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(Registered Under the Societies' Registration Act, 1860)

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2. To assist wherever possible in the national programme of family planning by undertaking to carry out various activities of a complementary, supplementary or innovative nature
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WOMEN SHOULD HAVE EQUALITY OF OPPORTUNITY

SMT. INDIRA GANDHI
Prime Minister of India

Prime Minister Indira Gandhi in her message to the International Women's Conference, held in Mexico in June-July 1975, stressed the need for equality of opportunity for women in programmes for health, education and employment as well as other areas. The full text of her message follows:

It is a worthwhile effort on the part of the United Nations to celebrate an International Women's Year. I congratulate Madame H. Sipila for the hard work she has put in. But for her enthusiasm and persistence I doubt if governments and voluntary organisations would have taken so much interest. I send greetings to the eminent women gathered in this Conference.

Women are not weak in themselves but because they are handicapped from birth, by customs and social attitudes, they have no chance of developing their innate strength. Women's emancipation owes much to the support, and in India even public initiative, of men leaders. However, a large number of educated men in all countries are treating this year as something of a joke.

People talk and write as if every woman were all women and every man all men. But we know that each individual is a combination of male and female genes in varying degrees. How can we consider woman's evolving role without noting the changing role of man? In the affluent countries and amongst our own urban upper classes, man is no longer the hunter, the protector, the sole provider. Altering social and economic conditions have been affecting sex roles. Because of the complexities of urban living and the need for population control, large families are being discouraged. Motherhood no longer has its old halo, nor is it so time-consuming. Hence, whether we like it or not, the more sophisticated a society, the greater the blurring of the hitherto clearly defined characteristics of the two sexes.

The consciousness of rights is not confined to women. It is part of the struggles of all those who have not had a fair deal. But it would hardly be correct to assume that men are liberated. Who have men to blame except themselves? They are imprisoned by their commitment to the status quo and the fear of change, especially in a manner which may threaten their supposed superiority.

Men, and unfortunately even women, are conditioned by our man-oriented society. We tend to accept norms which men have made without questioning their validity. Instead of imitating men, should not the norms themselves be examined in depth? Women should have equality of opportunity and programmes for their health and education, employment and better conditions of work. But surely this is not the sum total of what we ask. So long as woman has within her the archaic seed of dependence, no legislation or society can ensure her rightful position. Status is the outcome of history, heritage and social and economic environment.

There is confusion as to the meaning of equality. Is it a question merely of laws, jobs or sexual mores, the emergence of a pattern of unisex where male and female are indistinguishable in their responses, actions and contributions, or is it an opportunity for partnership in a joint endeavour? In Tagore's play, "Chitra", the heroine, says to her husband:

> *"I am no Goddess to be worshipped nor yet the object of common pity to be brushed aside like a moth with indifference. If you desire to keep me by your side in the path of danger and daring, if you allow me to share the great duties of your life, then you will know my true self."*

A lower status and lesser opportunities for women hamper the growth of the human race as a whole. It affects the lives of men themselves.

Mankind is confronted with cataclysmic challenges. Man has viewed the earth as a unitary globe from the heights of space. Yet on earth he seems unable to take a total view. Needless hardship persists. There is poverty and its attendant problems. There is growing violence. There is a dehumanisation of institutions and sterile cynicism. In the search for immediate palliatives, let us not allow the human dimension, the spirit of man, to diminish. Can woman offer perception and compassion and a total vision as regards the equitable distribution of the world's resources of knowledge, goods and services, so essential to survival?

What is her reaction to the cosmic need of preserving the purity of the earth, of its waters and its air, of saving species of animals, birds, and plants from threatened extinction and above all, what can woman do to bring about harmony within nations and peace in the world? If her responses are trivial, how can she rise in stature? Stature is a state of being, a matter of confidence and responsibility. Women's stature will be determined by her capacity to see with clarity and sympathy, and by her will to act.

THE STATUS OF WOMEN AND THE FAMILY WELFARE PLANNING MOVEMENT IN INDIA

SMT. SERLA GREWAL
Joint Secretary and Commissioner (Family Planning), Ministry of Health and Family Planning, Government of India.

The need for Indian women to come forward and contribute to the all-round development of the country is greatest today when India is striving to carve out its own position in the comity of the world's nations. In the words of Prime Minister Indira Gandhi, "Women's liberation is not a luxury for India but an urgent necessity to enable the nation to move ahead to a life which is more satisfying materially, intellectually and spiritually".

If we look back, we will find that though brief periods of Indian history witnessed setbacks to the status of women, there has been a firm and steady record of achievements of Indian women in different walks of life and of the recognition of their status in society. The saying that "the best way to judge a nation is to find out the status of its women" has to be viewed from what prevailed in India in the earlier periods and what exists today.

During certain periods, women could even choose their vocations and had full opportunities to excel men in different fields. There were celebrated women known for their dialectical dexterity. Women distinguished themselves in other fields of activity also. Chandragupta Maurya had employed armed women in his court as bodyguards. Kautilya in his *Arthashastra* has also mentioned women soldiers armed with bows and arrows. Buddhism also provided a place of honour to women in social life. They were made eligible to join the Bhikshunisangha which opened to them avenues of culture, social services and opportunities in public life.

Period of break

A short period of break in this tradition of equality of status with men came when social conditions in North India were rudely disturbed by successive foreign invasions. They brought about a deterioration in the activities of the social institutions and traditional political structures. There were migrations in large numbers and a general depression affected the economic and social life. Describing the happenings of this period Shri K. M. Panikkar has mentioned in his book *Women of India* that, "seclusion of women became a rule and there was a sense of fear arising from lack of general security. This gave the biggest blow to the education of women for which there was ample provision in the Buddhist period".

Succeeding periods of history witnessed the emergence of social and religious institutions in the country such as the Brahmo Samaj in Bengal, the Prarthana Samaj in Maharashtra, and the Arya Samaj in Punjab. The outstanding prophet of the new culture, which flowed from Western encounter, was Raja Ram Mohan Roy. He took up strongly the cause of restoration of women's status and quoted at length from the ancient Hindu scriptures to prove how the law had been subsequently distorted to the disadvantage of women. An important legislative measure of this period was the Widow Remarriage Act of 1856. This cause was championed by the well-known reformist, Ishwar Chandra Vidyasagar.

The Civil Marriage Act passed in 1872 abolished child marriage, fixed the minimum age for marriage and permitted inter-caste marriages This Act came into being largely because of the efforts made by Keshav Chandra Sen who was the leader of the Brahmo Samaj and laid great emphasis on women's education. Another important enactment related to the restoration of the rights of women to property.Sir Ganga Ram of Lahore, K. Viresalingam of Rajamundry, and Sir R. Venkatratnam Naidu of Peethapuram took up the cause of widow remarriage and launched a crusade against child marriage. Swami Dayanand Saraswati founded the Arya Samaj in 1875 and vigorously advocated the cause of women's freedom and education. He was able to overcome the bitter resistance of a large number of orthodox Hindus and succeeded in establishing his social reform movement on an enduring basis. Many other social and political leaders like Swami Vivekananda, Maharshi Karve, Bal Gangadhar Tilak, Gopal Krishna Gokhale and Mahatma Gandhi, thereafter, carried on the movement to give dignified status to women in the society. Swami Vivekananda observed: "A bird cannot fly on one wing. Similarly no society can make significant progress if you leave their women uncared for."

Political awakening

While the socio-religious movement and the work of reformers had their own impact on improving the status of women, the movements on the political front against the alien rule also made their contribution. The birth of the Indian National Congress in 1885 added to the awakening already affected by these leaders. The increasing emphasis on education, the influx of ideas from outside, the reform movement and the felt need to liberate the country politically had the cumulative effect of drawing out women to organize themselves. Gandhiji's appearance on the political scene of India gave a new dimension to the women's movement in India. In the words of Pandit Jawaharlal Nehru, "It was Gandhiji, that wonderful man and great revolutionary, who brought a dramatic change among our women when at his bidding they came out in large numbers from the shelter of their homes to take part in the struggle for India's freedom. Once the old shackles were removed, it was no longer possible to replace them in the same way. Demands were no doubt made to go back but they were bound to fail". Gandhiji's call for Satyagraha evoked tremendous response not only from educated women but from women in rural areas also.

The Independence movement brought to the fore a number of women leaders like Sarojini Naidu, Kasturba Gandhi, Kamala Nehru, Vijayalakshmi Pandit, Rajkumari Amrit Kaur, Sushila Nayyar, Kamla Devi Chattopadhyaya, Arun Asaf Ali, Sucheta Kripalani and many others. Smt. Indira Gandhi has distinguished herself as the Prime Minister of India, which populationwise is the second biggest country in the world, and as a leader of the people she has brought about all-round development in the country.

Processes of change

The processes of change like modernization, democratization, development, urbanization, industrialization, etc., have all today brought about an improvement in the status of women in degrees. The rights of equality granted to woman in our Constitution have placed her side by side with man in every walk of life. Yet education continues to be one of the most important factors to maintain and accelerate this tempo. It is said that only ten per cent of the total female population has so far been covered by the formal system of education. Much of this is due to the neglect of the rural population, which is about eighty per cent of the total population of the country, during the pre-independence period.

Women bear the brunt of large families. Studies have shown that high rates of infant mortality, maternal mortality, lower expectation of life at birth, malnutrition, mental disorders, suicide rates and certain sex diseases are directly related to the status and role of women in society. All the developing nations today are faced with the problem of rapidly growing populations. Inadequate housing, sanitation and insufficient medical facilities adversely affect the vulnerable sections of the community Maternity, therefore, constitutes a special problem. Studies have also shown that the female mortality rate is higher in rural areas. This is no doubt mainly due to the consistent neglect of female health and paucity of health services in villages.

Awareness about the small family norm

The all-round awareness about the need for accepting the small family norm generated through the family welfare planning movement during the last ten years has certainly gone a long way in making people generally conscious and aware of the need for limiting their families and improving the health of mothers and children Yet there is a wide gap between knowledge and acceptance. The Family Welfare Planning Programme aimed at tackling the problem of the high growth rate of population is linked with the basic problem of poverty, so that it is not run in isolation from social realities. As a social welfare programme, it is taken as a component of development and it is linked with the Minimum Needs Programme which has the basic objective of improving the quality of life of the large sections of the people who have long remained a victim of poverty and neglect.

The 20-point economic programme, recently launched by the Prime Minister, has opened a new vista for the economic and social uplift of the people. Gradual implementation of the programme is bound to bring about a marked improvement in the economic condition of the people in rural areas which have hitherto been infested with poverty. This change is certainly going to reflect on the general behaviour and way of life of the people.

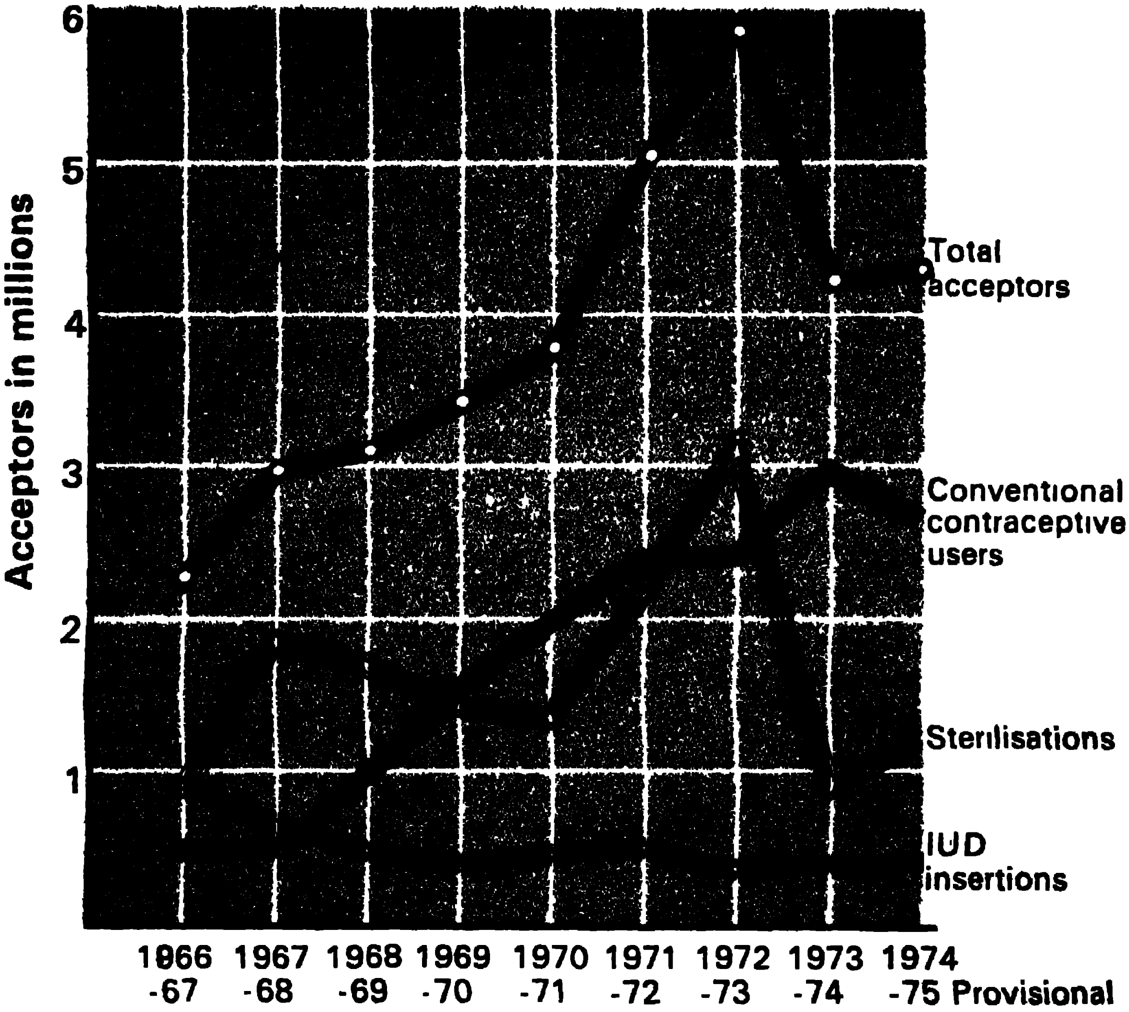
Coupled with the growth of education and opening of wider opportunities for women to contribute in different fields, India can hopefully look forward to the acceptance of the small family norm by people in larger numbers and thereby to an improvement in the quality of their lives. The effectiveness of the family welfare planning movement and the cooperation and participation of the Panchayats, social and political bodies and voluntary organisations are certainly going to improve the condition of the people in general and the status and position of women in particular. This will also help in making a dent on the rapid growth of population, which is fast assuming dangerous proportions. With more and more women coming forward to shoulder responsibilities in different fields of work, the consciousness of the need to have small families is growing at a much faster rate than before. It is, therefore, clear that women have to play a dominant role in this sphere, which is ultimately for the betterment of the whole society and the nation.

The family planning programme in India has been gaining steady momentum and more and more people are progressively accepting family planning as a way of life. Since the inception of the programme about 12.29 million vasectomies, 4.40 million tubectomies and 5 58 million IUD insertions were performed upto August 1975. The number of sterilisations done in India form nearly ninety per cent of the sterilisations done in the entire world. In addition, 2.31 million persons are estimated to be using conventional contraceptives of various types. As a cumulative effect of the programme about 16.52 million couples, sixteen per cent of the total number of eligible couples (wives within the reproductive age group of 15-45 years), have currently been protected from the risk of conception. In all, 22.2 million births are estimated to have been averted as a result of the family planning programme upto August 1975.

"I am convinced that in India today progress can be and should be measured by the progress of the women in India."

—*Jawaharlal Nehru*

Total acceptors by family planning methods, 1965-66 to 1974-75



Source: Family Welfare Planning in India, Year Book, 1972-73, Ministry of Health & Family Planning, New Delhi.

The family planning programme continues to receive the highest priority from the Centre. Its main objective during the Fifth Five-Year Plan will be to cover 40-42 million eligible couples in order to reduce the birth rate to 30 per 1,000 population. The 1975-76 target has recently been revised from 8.4 to 7.5 million acceptors with a view to making the targets more realistic in terms of their actual achievement, and by considering for the first time, factors like female literacy and socio-economic conditions in the state. The 7.5 million acceptors would comprise 2.5 million sterilisations, 0.8 million IUD insertions, 3.75 million conventional contraceptive users and 0.25 million users of other methods.

DEMOGRAPHIC CHANGES AND THE STATUS OF WOMEN

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It has been pointed out in the International Encyclopaedia of the Social Sciences that "Whereas formerly superiority of status could mean any sort of hierarchial ordering—of power, wealth or honour—to many it now refers only to esteem, prestige, honour, respect, that is, to various forms of evaluation".[1] In the sense in which Linton[2] used the term "status", it has come to be a synonym for any position in a social system. The common bases of status are enumerated as being age, sex, birth, genealogy and other biological and constitutional characteristics. The terms status and role are often differentiated by pointing out that status defines *who* a person is, while role defines *what* such a person is expected to do. For the purpose of this paper, following Linton, the term status, role and social position are used interchangeably, while discussing demographic changes and the status of women.

Demographic changes refer to changes in the size, spatial distribution and composition (that is, structure and characteristics) of the population, and an understanding of the processes of such changes leads to an appreciation of the contributing factors. While discussing demographic changes, with special reference to the status of women, what can be attempted is a study of the interrelationships between demographic factors and the status of women. No attempt need, of course, be made to separate cause from effect in this relationship as this is likely to create an artificial conceptual distinction, which may, in fact, not exist. On the other hand, the identification of the various factors in the interrelationship and the recognition of their importance could lay down the lines on which planned change can be induced to bring about demographic changes as well as improvement in the status of women. In this paper, one such attempt is made, though, of course, no claim is made that the coverage is exhaustive.

Rapid population growth and women's status

Rapid population growth, under-development and the low status of women invariably appear to go together. In such a situation, the large size of the population itself is likely to result in discrimination against women because of the limited resources that are available. It is worth noting that the participants of the various seminars on the Status of Women and Family Planning organized by the United Nations, while recognizing the heavy burden that future increases in population would place on any country's material resources and services, invariably expressed the fear that "under extreme competition for scarce resources, women, who are already disadvantaged would suffer from even greater disabilities".[3] The background paper on "Study on the Interrelationship of the Status of Women and Bucharest, states unequivocally, "*In the absence of a deliberate policy to the contrary, the promotion of equality between men and women might be sacrificed to even stronger preferential treatment for males in education, training and employment. Thus, women would be left with few options but to continue in their traditional roles in a patriarchal society, perhaps under even worse material and social conditions than before. In turn, of course, this situation would most likely encourage and foster the maintenance of high birth rates, perpetuating the vicious cycle of growth and scarcity of resources.*"[4]

Spatial distribution of population and women's status

In most developing countries, a very high proportion of the population lives in the rural areas. Rural residence is linked with a traditional way of life and a general resistance to any change. In such societies, women are generally accorded a poor status, with few opportunities for education, training or gainful employment leading to economic independence.

Though in recent times migration plays a negligible role in the population growth of most developing countries because of restrictive international regulations, the pattern of migration from the rural to the urban areas in these countries indicates that men by far outnumber women in this exodus. This fact gets reflected in the sex ratio in the urban areas, as can be seen in the situation in a metropolitan city like Greater Bombay, where there were 1,396 males per 1,000 females, according to the 1971 census. (The corresponding sex ratio for India was 1,075 males per 1,000 females in the same year.)

The practice of married men leaving behind their families in the rural areas is likely to be more common amongst the lower socio-economic groups, because of the housing shortages as well as the high costs of living in the urban areas. In a recent survey undertaken in a large textile mill in Bombay by the International Institute for Population Studies, approximately 54 per cent of the married blue-collared workers, whose wives belonged to the reproductive age group, reported that their wives were in their native places.[5] The social implications of such a situation for the status of women can be well-imagined. In the urban areas, exploitation of women for prostitution appears to be the most common outcome, subjecting women to a life of indignity and degradation. The wives left behind in the rural areas, on the other hand, are shut off from all forces of modernization, which emanate from the urban areas. Education and employment opportunities are denied to them and exposure to the mass media is at the very minimum. Their very existence depends on the meagre pittances remitted by their husbands. At the same time, they are heavily burdened with family and domestic responsibilities. If subsidized living accommodation is provided by the employers for the families of these workers, the pattern adopted by migrant men of leaving behind their wives in the rural areas, will not continue. The benefits of this urban migration will definitely improve the status of women, as they will be exposed to the forces of modernization to a greater extent. One advantage could be their acceptance of the norm of the small family, which would leave them free to search for new avenues of self-expression and self-development, rather than being tied down to childbearing and childrearing for the most fruitful years of their lives.

Sometimes it is suggested that instead of clamouring for more urbanization, substantial social and economic benefits would flow from concentrating on modernizing the rural areas. Electrification of the rural areas and improved methods of home management indirectly help to liberate women, at least to some extent, from the drudgery they have been chained to for centuries. The Satellite Instructional Television Experiment at present in operation in India, while attempting to achieve the goals of national integration and functional literacy, also aims at bringing to our rural masses, information on health and family planning. The widening of horizons of the rural people through this experiment is expected to bring about a change in their traditional attitudes and norms which one hopes would have a beneficial effect with respect to the status of women.

Mortality and women's status

The dramatic declines in mortality in the developing countries, though they have also benefited women, need not be attributed to any improvement of the status of women in these countries. The credit goes to the World Health Organization for introducing a dramatic concept of public health and for the determination with which national governments have taken up mass programmes for irradication of "mass killers" such as malaria, small-pox, cholera and plague. As a result of this approach, the expectation of life at birth has increased all over the world, irrespective of the level of development, though regional differences do exist.

Have the declines in mortality benefited men and women equally ? It is observed that "expectation of life at birth is almost universally higher for females both in developed countries with low mortality and in developing countries with higher mortality levels".[6] India, Pakistan and Sri Lanka are named as exceptions to this general position. In India, while the expectation of life at birth is around 48 for men, it is about 46 for women.

The sex ratio in India (that is the number of males per one thousand females) has invariably been favourable to men and been on the increase over the years. "The increase in sex ratio over time indicates that the risk to female lives has not improved in relation to the risk to male lives."[7] Visaria, commenting on the sex ratio in India and on the excess of men over women in the Indian subcontinent states, "My intensive investigation of the factors responsible for this anomalous situation has suggested that the primary reason is the extra risks of mortality suffered by women of this sub-continent from childhood to advanced ages".[8]

Such a situation no doubt reflects the poor status of women in India where neglect of female children during the early years and the risks involved during childbirth are still prevalent. Frequent child-bearing as well as poor health and medical services no doubt contribute to the high mortality rate in India, which is estimated to be 573 per 100,000 live births in rural India, whereas for developed countries such as the United States and the United Kingdom these rates are as low as 32 and 25 respectively. Effective measures to control fertility and improvement in the medical and health services would no doubt reduce maternal mortality and thus reduce to some extent the mortality differentials based on sex. It can also be pointed out that when the right to the enjoyment of the highest standards of physical and mental health, as recognized by United Nations instruments, is granted to and achieved by the people in these countries, irrespective of the sex to which they belong, these differentials would depend mainly on biological rather than on social and cultural factors, and it is known that biological factors are more favourable to women than to men.

Fertility and women's status

While considerirng the interrelationship between fertility and the status of women, it is necessary to consider the totality of the socio-cultural environment in which reproduction takes place. There is no doubt that children will always be valued, not only as economic assets, as in agricultural societies, or for the affectional needs of the parents that they fulfil, but for several other reasons. As pointed out by Blake, "They are the instrumentalities for achieving virtually prescribed social statuses ("mother", "father"), the most exclusive avenues for feminine creativity and achievement, and the least common denominator for community participation".[9]

In traditional societies, childbearing itself restores prestige on the wife, and a childless woman is even looked down upon. Sociologists have observed that the new daughter-in-law in the Indian family is accorded her rightful status only after she gives birth to a child, preferably a son. Research evidence is available through several studies, that Indian couples desire and hope to have at least two sons. Particularly revealing is the finding of Mohanty that changes could occur in the respondent's own concept of "ideal family size" when an important factor likely to determine the ideal family size such as having a male child was hypothetically manipulated.[10] In this study conducted in a colony of the Maharashtra Housing Board in Bombay, it was found that at least some respondents, who desired to have only three children, were willing to extend their family size to even nine children in order to ensure a male child. As expected, the same did not hold true when a female child was at stake. It was also found that though the average ideal family size as given by the male sample was 3.48, they were willing to have, on an average, 4.50 children in order to have at least one male child, but, on an average, only 3.90 children in order to ensure at least one female child. The corresponding figures for the female sample were 3.50, 4.65 and 4.23 respectively. These findings not only highlight the extent to which sons are valued in the Indian society but also how women themselves contribute to the perpetuation of such values.

It is normally expected that fertility would be lower in the urban than in the rural areas, because urban people are presumably more sophisticated and more exposed to new ideas through non-familial contacts. The actual reproductive behaviour of Indian women, however, indicates that the expected rural-urban differentials in fertility are practically non-existent and have started making their appearance only recently in large metropolitan areas. Such a situation exists because urban Indians do not necessarily adopt the urban way of life. They maintain their rural ties and cling to their rural roots, move in their own language group and invariably live close to their own caste and family group. Only when powerful forces of change are released in the form of expanded networks of mass communication and opportunities are created for increased contacts with the outer group and the outer world, will an urban mentality be created. Such an urban mentality should mean, in the present context, the acceptance of women by men as equal partners in life and the recognition of an improved self-image by the women. Voluntary parenthood would then be a way of life for the truly urban couples.

Though rural-urban fertility differentials have not yet been evident in India, there is evidence that the educational status of women is associated negatively with fertility. The Mysore Population Study indicated that the average number of children born to ever-married women above the age of 45 was 5.4 for illiterate women whereas it was 3.9 for women with high school or college education. Though this difference was partly due to the higher age at marriage for those with high school or college education, these differences persisted, though to a lesser extent, even when the averages were standardized by age at marriage and duration of marriage.[11] Similarly, it was found in the Sixteenth Round of the National Sample Survey held in 1960-61, that among women who were 47 years old and over, the total completed fertility varied inversely with educational attainment. Illiterate women or those with only primary education had an average of 6.6 live births; those who had a middle school education averaged 5.0 live births; those who had completed high school education had 4.6 live births; and those who had some university education had only 2.0 live births.[12]

While commenting on this situation Cool points out, "It is recognized that many other factors were at work, in addition to education and that it is not possible to say with precision what proportion of fertility differentials related to education are exclusively a result of education itself, but a recent study has shown that over one-third of the total variance in fertility in a number of countries, is the result of education and that education was four times more significant than a combination of all other variables which were measured.[13] Here again, while understanding the interrelationship between educational attainment and fertility, it is important to remember that, "It is not higher education *per se*, but its association with factors such as openness to new ideas, higher socio-economic status and standards of living, exposure to an urban environment, and a greater range of options and interests outside the home that is responsible for the apparent influence of one on the other".[14]

While analysing cultural influences on fertility, Davis and Blake have identified several "intermediate variables" through which cultural conditions can affect fertility.[15] One such intermediate variable with reference to the status of women is "age of entry into sexual unions", which is one of the factors affecting exposure to intercourse.

governing the formation and dissolution of unions in the reproductive period.

In most traditional societies, the age at marriage for women is low, and the choice of the mate is done by the elders. These two facts, considered together, are themselves indicative of the low status of women in such societies, where virginity of the bride at the time of marriage is highly valued and the assimilation of the new daughter-in-law in the larger family group has to be achieved before she has the opportunity to develop an independent will of her own. The low age at marriage and the absence of marriage-by-choice also eliminate the romantic complex and help to de-emphasize the conjugal relationship at least in the early years of marriage, so that greater loyalty of the husband to his parents, to his brothers and sisters and other relatives than to the wife is ensured for the maintenance of the joint family.[16]

The demographic implications of any effort to raise the age at marriage for women are controversial. Though there is some evidence that an association exists between postponement of marriage and reduction in the number of children, it is doubtful whether high age at marriage by itself (unless it is particularly high as in the case of Ireland) can lead to any reduction in fertility, unless some conscious effort is made to control fertility through contraception. Raising the age at marriage for women will no doubt mean that women will have more opportunities for education and employment, will be more mature while entering marriage, and will be more likely to subscribe to the idea of voluntary parenthood, with implications for her fertility performance.

The role of family planning

Control of fertility through contraception is an important measure to slow down the rapid growth of population in developing countries. Most countries with national family planning programmes also have a general objective "to improve the state of health and total well-being of the people."[17] The Third Five Year Plan of India expressly recognized the need for improving the status of women while outlining the family planning programme. "Finally, it should be added that besides facilities which are undoubtedly needed in any large-scale effort to limit families, there should be the greatest emphasis on the moral and psycological elements, on restraint and on such social policies as education of women, opening up of new employment opportunities for them and raising the age for marriage."[18] Again, one of the tasks assigned to the team of United Nations experts, invited by the Government of India in 1965, was to consider "the problem of co-ordinating the family planning programme with programmes in related social fields, including health, education, community development and status of women."[19]

A review of the present status of women in India highlights several factors directly or indirectly standing in the way of improvement in the status of women. Based on the findings of the surveys in Haryana, Tamil Nadu and Meghalaya undertaken by the Council for Social Development for studying the status of women in relation to family planning, Mukerjee gives the following list:[20] (a) low standard of living, (b) low level of literacy and education among women; (c) economic dependence of women; (d) women's ignorance of their own fundamental human rights; (e) low inter-spouse communication; (f) the stronghold of tradition upon women; (g) women's beliefs in fate and generally low level of "personal efficacy" and, (h) the low level of participation in community life.

Though this list is formidable and contains all the possible barriers to the acceptance of family planning, it is well to remember that in India apart from those in the higher socio-economic groups (presumably those with high social status), women of high parity have also started accepting family planning despite their low level of socio-economic status. The acceptance of family planning during the later stages of family building, however, yields limited demographic benefits. The attack on the problem, therefore, has to be on many fronts and family planning has to be viewed in the larger context of social change. Efforts have to be made to improve the status of women, so that family planning is accepted when it can be demographically meaningful, both at the micro as well as the macro levels. On the other hand, it must not be forgotten that family planning aids in improving the status of the woman by preserving her health, and fosters favourable conditions for her own advancement and her contribution to the development of her community and the progress of her country.

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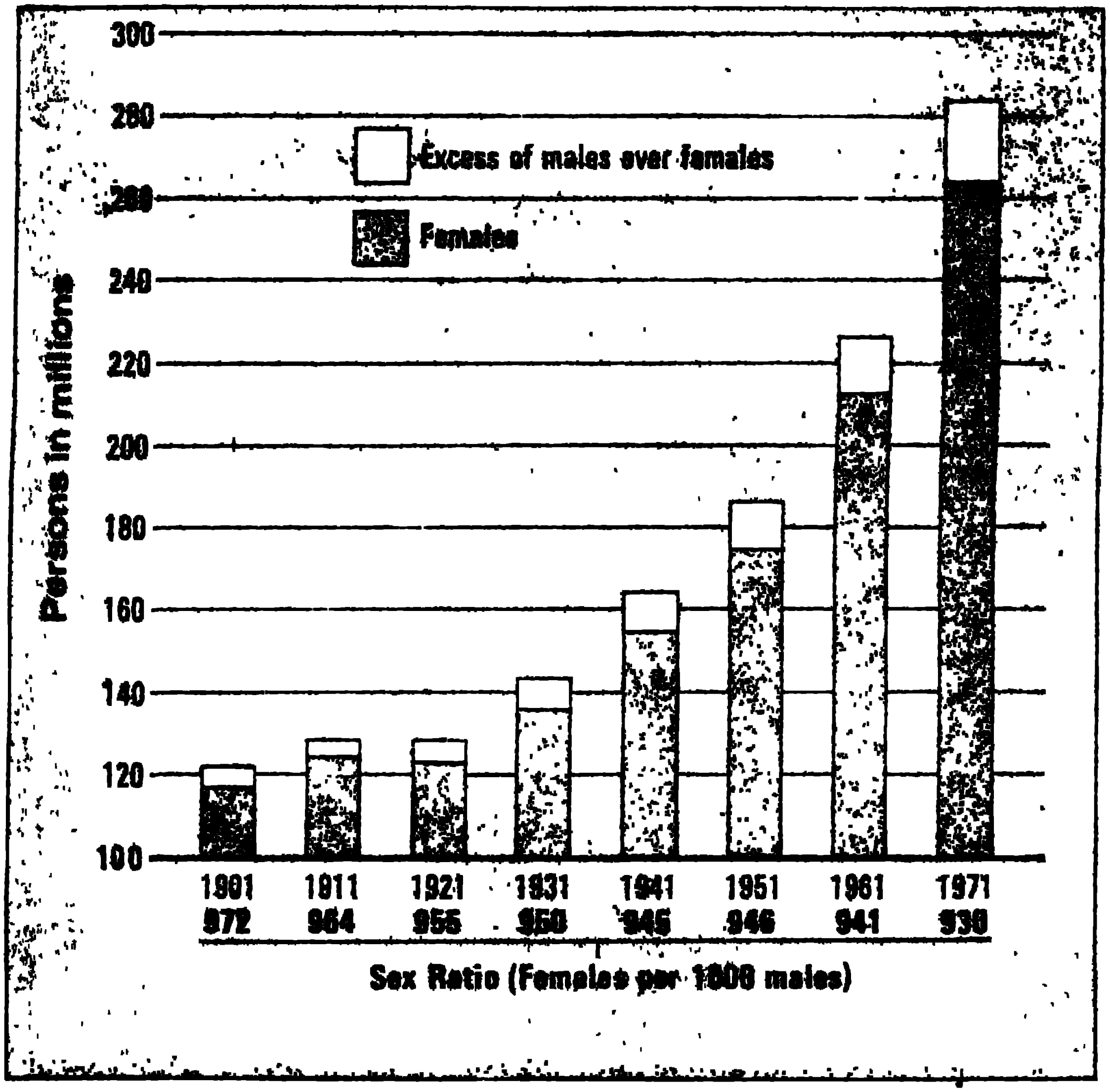
Growth of female population, 1901-71 (millions)



An adverse sex ratio (number of females per 1,000 males) for women is the most prominent demographic feature of India. A reflection of the higher death rate of females both in infancy and in the child-bearing ages, it is a result of biological as well as social factors. While the former account for higher mortality rates in male infants in the first month of life, the latter act against female infants from about the first month of life upto and beyond her child-bearing years.

Excessive child-bearing takes a heavy toll of women's health. Over 20 per cent of deaths in the 15–34 age group are caused by childbirth and complicated pregnancies. The availability of improved health services, including family planning services, over the last two decades, have led to an increase in the expectancy of life at birth of females from 26.6 years in 1921-31 to 45.6 years in 1961-71. The sex ratio, however, continues to decline.

RESPONSIBLE FATHERHOOD

SHRI K. T. SATARWALA
Formerly, Advisor to the Governor of Gujarat

Mrs. Helvi Sipila, who is the Secretary-General of the International Women's Year Conference, besides being Assistant Secretary-General of the United Nations, the highest administrative rank ever attained by a woman in the world body, recently told the Inter-Parliamentary Union's Annual Conference at London that men should take over most of the housework, making women free to participate in the life of the society at all levels. Speaking, as she did, for half of humanity, her remarks command attention. The two sexes must be equally responsible for the family and for the life of society.

It is appropriate that in this special issue of the Journal, brought out in observation of International Women's Year, we should be examining the role of the father as a truly responsible partner in the family. His very wide ranging responsibility is not only towards his wife and his family, but, in the wider sense, also to the community in the village or the municipal precinct, to his country and finally, to all of humanity on this planet. Why is it relevant to dwell on the responsibility of the father rather than of the parents ? Because, for hundreds of thousands of years, man, as the bread-winner and for many other reasons, has remained the dominant partner in the family. On the other hand, burdened by multiple pregnancies, the care of numerous children and the anguish of ever-present death in the family —together with a million taboos, woman has traditionally remained confined to the house.

As Evelyne Sullerot[1] observed, "Before all else, the wife was considered as a breeding machine to perpetuate the male line of the husband, the tribe and the race. Therefore, the punishments for female adultery were extremely severe, as by this act the woman asserted her individuality, her free will, her right to choose. Such an assertion was seen as a threat to the whole male-centred structure".

Apart from being confined to the house, apart from repudiation when infertile, in this patriarchal system, women were for long excluded from owning and disposing off property and had no civic rights. The attitude of a male-dominated society to unmarried mothers, to abortion and to prostitution are only too well-known.

Matters have changed somewhat but there are still vast areas of injustice and this is so in spite of the egalitarian written constitutions adopted by many countries.

There is yet another reason for considering the responsibilities of the father rather than of the ideally equal partners of a marriage. In the world today, there are well over 1,000 million illiterates, of whom, at a conservative estimate, over 700 million are women. The following table speaks for itself:

Difference between male and female illiteracy rates

Country	Percentage of illiterate males	Percentage of illiterate females	
Cambodia	22.3	75.4	
Burma	20	60	
Hongkong	9.8	48.2	
Peru	25.6	52.4	
Turkey	45	78.9	
Taiwan	27	56	
India (1971)	54.72	78.52	excluding age group 0–4
	60.55	81.28	including age group 0–4
Indonesia	42.8	70.4	
Israel	9.5	22	

Source : Adapted from *Women, Society and Change*, E Sullerot, World University Library. Weidenfelt and Nicolson, London, 1974.

The burden is clearly on men to change this shameful position. How can those who are sunk in illiteracy so extensive and ignorance, taboos and traditions which are as old as humanity itself ever pull themselves out of this situation ?

Now that the science of contraception has at last made it possible for women to control their fertility, rid themselves of the curse of multiple prenancies and the rearing of numerous children, it is the men who will have to take a responsible view and help them. That the male attitude is still primitive was seen by my wife and me during our intensive touring in Orissa and Gujarat.

Women are ready enough to adopt the small family norm and limit the size of their families. This is illustrated by the ready acceptance of an operation such as tubectomy. Admittedly, they come, in many cases, entirely on their own but after they have already had an average of over four children. They would, however, have come much sooner if the attitude of the father of the family had been different.[2] As the increasingly literate partner in marriage, his is the greater responsibility—all the more so, when literacy levels, in at least one area surveyed, among future husbands and wives are anticipated to be as follows:

Literacy levels among future husbands and wives

Year	Per cent Literate		Spouses' Average
	Husbands	Wives	Literacy
1975-76	82.6	56.5	69.6
1978-79	96.3	58.5	77.4

Source: Family Planning Practices in India, Operations Research Group, Baroda.

We should here take note of the results of the latest survey conducted in Delhi by the National Institute of Family Planning (NIFP)[*]. The objectives were to compare the family planning knowledge, the fertility preferences, and the fertility performance and fertility control behaviour of working and non-working women. It was found that although 50 per cent of both working and non-working women were illiterate, there was absolutely no difference between the women of the two groups as regards knowledge of family planning, its methods and the desirability of using them as also the desire for additional children. Employment of women outside their homes is one of the most likely reasons leading to the desire for a small family. Also women's participation in the labour force is related to the size of the family. The survey found that there was no incompatibility between the twin roles—work role and house role. These findings point to the need for the father not to come in the way of his wife taking up a job. In many families, there is still a prejudice against women taking up jobs outside their homes, because of the age-old notion that working outside the home and a home-life for women are incompatible.

However, irrespective of whether the father or mother is literate, it has to be recognised that family relationships are pervasively *responsible* relationships. Society has surrounded the family system with constraints so that the decisions to establish, alter or terminate family units are not made casually. Man must accept that no woman is made to conceive and bear an unwanted child. This is emerging as a fundamental right. And yet, in a male-dominated world, a good percentage of the population lives in countries where abortion is either totally prohibited or permitted only to save the life of the pregnant mother or where there is a threat to the woman's health. Elective abortion is yet not in sight—thanks largely to the attitude of men. Let it not be argued that crushed by poverty and ignorance, men in our country and other developing countries are unlikely to understand such concepts. It is the experience of family planners in many countries, including our own, that it is possible to demonstrate to men that when household budgets are barely at the subsistence level, the nurture of each additional child has inevitably to be at the expense of those already born. Mounting inflation and the extremely high cost of living are making the task of convincing men easier.

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[*] *The Times of India*, New Delhi, September 21, 1975.

Knowing that the health of the mother is important, subjecting her to unplanned and multiple pregnancies is to pose a threat to her health, especially in developing countries where health services are already stretched to their utmost limits.

The responsible father must also recognise that high mortality rates among children are the inevitable result of such pregnancies. Population statistics are obviously not for the common man but even he can understand information conveyed in a simple enough form. Stanley Johnson[3], Project Director of the UNA National Policy Panel on World Population, cites the experience of Taiwan where it was possible to demonstrate effectively that where a mother already had three children, infant mortality was 9.9 per cent. If she had between four and six children, it was 17 per cent ; between seven and nine, it was 22 to 24 per cent and if she had oven ten children, infant mortality was 54 per cent. This was found to be a forceful argument for small families. The responsible father must accept it as much in India as anywhere else.

Equally, he must accept that if family incomes are low and families large, malnutrition, mental impairment and other damage to health are inevitable.

In its most simplified form, therefore, the concept of responsible fatherhood in the narrow confines of the family consists in the man recognising the right of the woman not to conceive and bear unwanted children : in the man caring for the health of the woman and accepting that every addition to the family deprives those already born, and that large families mean high infant mortality, malnutrition and damage to the mind and bodies of children.

But this is by no means all. As we saw earlier, responsibility in fatherhood extends beyond the home. High population rates mean a high proportion of dependents, as shown in the table below:

Dependency ratio of selected countries

Country	Dependency Ratio
Australia	59
Canada	61
Sri Lanka	79
Egypt	86
France	59
West Germany	58
India	79
Japan	45
Pakistan	99
Taiwan	79
United Kingdom	58
USA	62
Soviet Union	56

Dependency Ratio: Population in the age group "under 15 years" and "65 years and over" *divided by* the population "15-64" years x 100

* *A Fact Book · Population and Family Planning Programme, Reports on Population and Family Planning*, No 2 (Fifth Edition), Population Council, 1973

In developing countries, half the population is below fifteen years of age. These countries, including India, are faced with the unequal task of building enough schools to educate the vast number of additional children, primary health centres and hospitals to care for them (and their mothers) at birth and in infancy, to feed them, house them and clothe them before they can become productive members of society. Whether sufficient employment would be available for such numbers, in agriculture or industry, is itself a problem for the governments of such countries. Here is a paradox. Enough investments cannot be made in agriculture, which would help to produce more food, or in industry, which would create more jobs, and yet social services must be provided for the growing numbers. Even when investments are made and more transport provided, schools and hospitals built and other services provided, the overcrowding and the inevitable struggle of numbers at every stage results in social unrest and political instability.

How serious the situation already is should be evident to the responsible father. The World Bank Annual Report*, just published, speaks of the number of urban dwellers, already 819 million in 1975, rising to 200 million by the end of the century and creating more complex problems of urban housing, transport, etc. According to the Report, UN estimates say that the number of people in developing countries living in cities and towns of over 20,000 inhabitants would rise from 30 per cent in 1975 to 42 per cent in 2000. Half of them will have come from the rural areas. The poor, unable to buy or rent housing near centres of employment, are already pushed to the peripheries of cities where transport facilities are non-existent or costly. Facilities even for *walking* or *cycling* in the cities of most developing countries are notoriously poor. When this is the position in 1975, what will it be like in 2000 ? We have seen how such urban chaos and the attendant squalor in the slums and the pervading unrest threaten the very foundation of public order.

In its wider sense, therefore, responsible fatherhood means accepting that the present rapid rates of population growth jeopardise the best efforts of governments for the economic and social development of their peoples, when these governments are engaged in overcoming intolerable pressures on land, on food availabilities, on clothing, on shelter, on public health facilities and on opportunities for employment.

The paradox is that something which is so intimately private and within the family is at the same time inescapably public because it affects the nation. Dr. Karan Singh, our Minister of Health and Family Planning, refers in one of his articles to the task of bringing down the birth rate. "What is involved," he says, "is the necessity to influence millions of decisions made by millions of people in the most intimate areas of their private lives and behaviour".[4] It is in these decisions that the responsibilities of fatherhood lie.

We now come to the final aspect—responsibility in its widest sense. When parents, or rather fathers, do not act in a responsible manner and populations grow, as they are growing today, the resulting problem is the concern not only of the family, of the community or even of the country but of the whole world. Ours is a very small planet. More people on it result in a more rapid using up of the very finite resources, of the very thin biosphere in which alone human beings can survive. Already the indiscriminate felling of trees, the resulting loss of the precious top-soil and the pollution of air and water are creating massive problems not only in developed countries but in developing countries also. Man may well derive satisfaction from stepping on the moon and journeying out in space, but life as he knows it, can be lived only in the biosphere of planet Earth. A glance at the Chart should show the responsible father that what he may regard as his private and most intimate concern is really the concern of the whole world because he is a passenger on a spaceship —today, one out of 4,000 million other human passengers, by the year 2000 one out of 8,000 (?) million.

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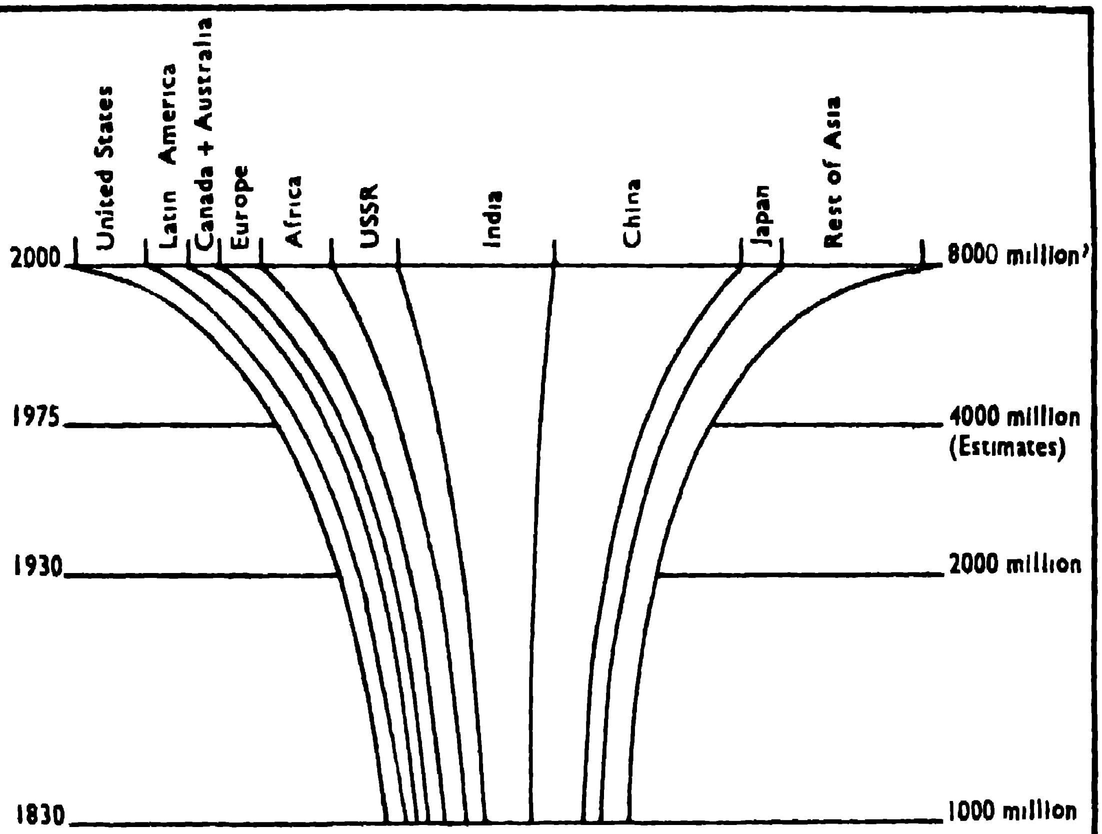
* *The Times of India*, New Delhi, August 28, 1975



OUR MUSHROOMING POPULATION

What shall it be ? Will he, by irresponsible behaviour, make the very chilling and terrifying projections of the doomsday clubs come true or will he ensure, by responsible action that his family is limited in size so that in the aggregate each human being on this planet is assured of the material, intellectual and spiritual inputs necessary for the full flowering of the human personality ?

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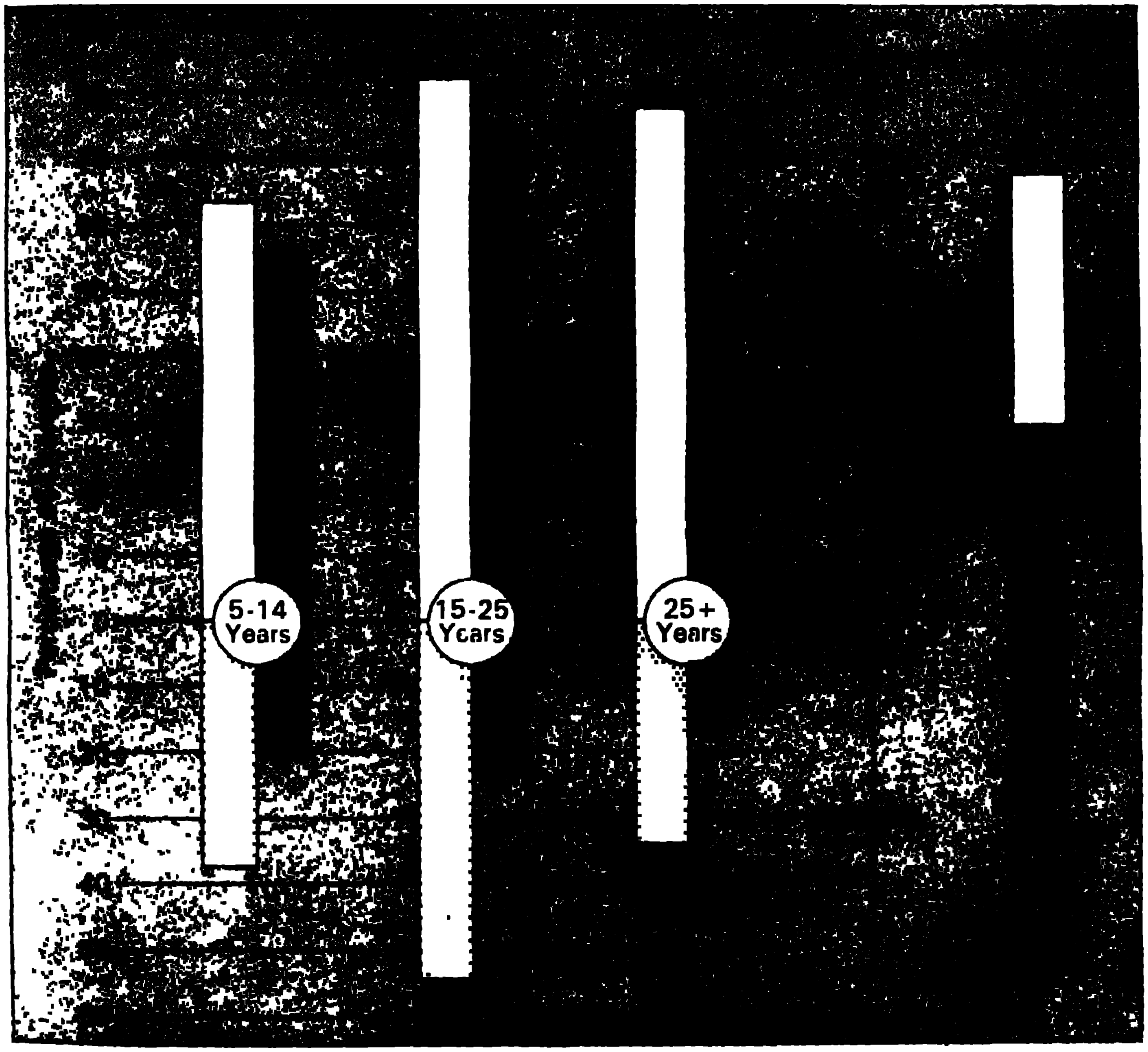
"Woman is companion to man gifted with equal mental capacities. She has the right to participate in every minutest detail in the activities of man, and she has an equal right of freedom and liberty with him."

—*Mahatma Gandhi*

WOMEN AND EDUCATION

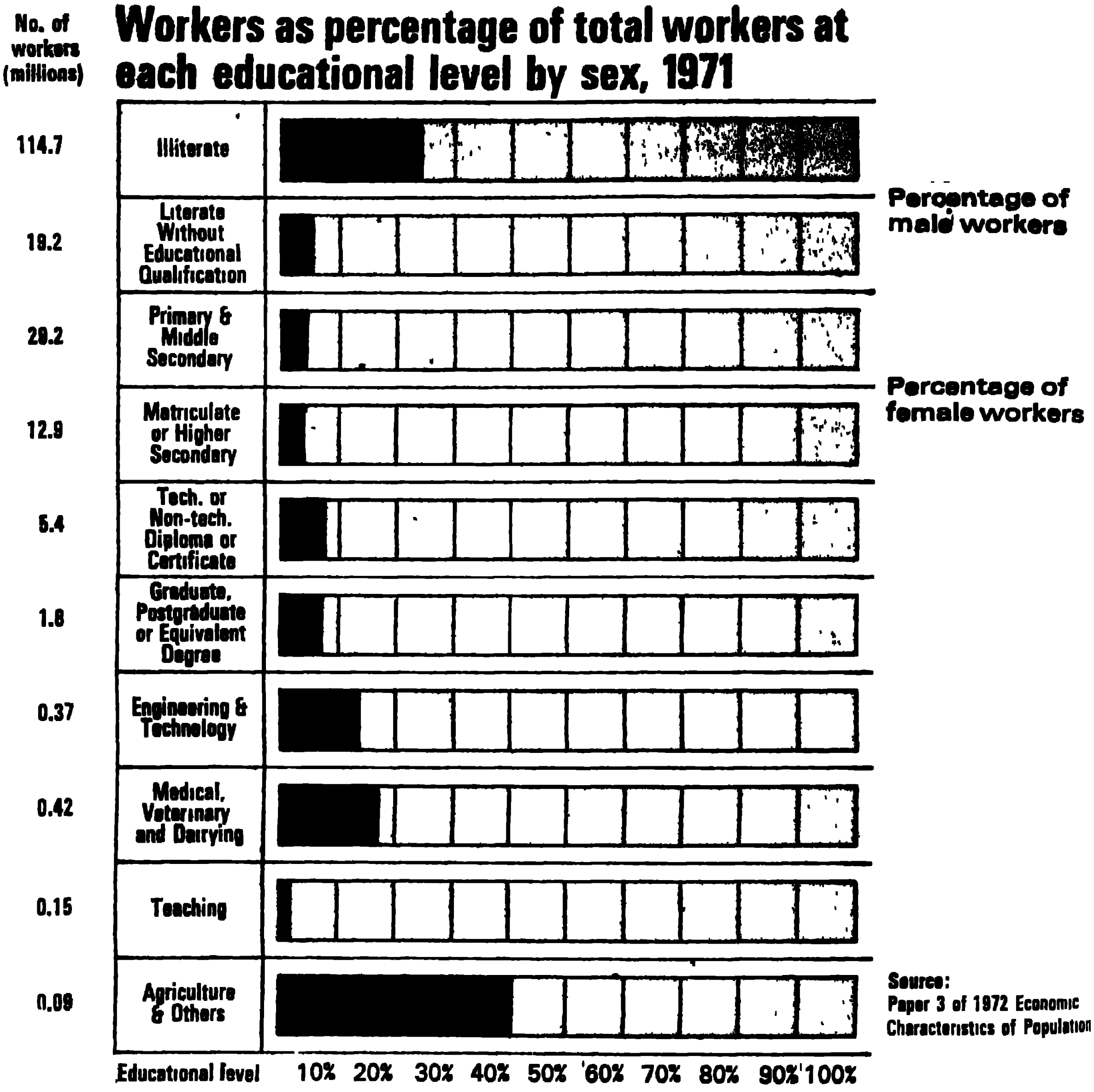
Percentage of literates to corresponding totals by age, sex and residence, 1971



The pre-Independence period saw the creation of a climate in favour of the education of girls. On the eve of Independence, barely 8 percent of the women were literate and for every 100 boys, only 37 girls were enrolled at the elementary stage. During the post-Independence period, women's education was emphasised and since then, female literacy has steadily increased.

Today, the female literacy rate stands at 18.7 percent (much lower than the male literacy rate of 39.4 percent), and for every 100 boys, 12 girls are enrolled at the elementary stage. The rural-urban differential in female literacy though, is very striking, with an all India rural rate of 12.9 (ranging from 3.8—52.3 percent) against an urban rate of 41.9 percent (29—60.5 percent). The difference ranges from 35 in some States to 23-27 percent in others.

Workers as percentage of total workers at each educational level by sex, 1971



Source:
Paper 3 of 1972 Economic Characteristics of Population

However, though girls' enrolment has increased, it is lower than that of boys at every stage of education. The real gap develops in the 11-14 age group when boys move on to the middle school level and girls are withdrawn from the school stream. On the whole, four times as many boys manage to stay on in school at this level. In the 14-17 age group, only 6.9 percent of the girls (mainly city dwellers) were at school in 1966 as against 23.7 percent of the boys. At the University level, women still prefer "traditional" faculties like Education, Arts and Medicine. Their increasing enrolment in Science and Commerce is indicative of a shift from traditional faculties to non-traditional ones.

The educational level of women appears to be one of the strongest factors affecting fertility, especially in high fertility countries. Studies in many developing countries also show that women with high school and higher education marry considerably later, are less likely to know about and practise modern effective methods of contraception than are less educated or illiterate women. Most studies show that however the causal mechanism works, investment in female education may have a greater impact on fertility than the same investment in schooling for men.

Enrolment percentage of various educational levels by sex and age-group, 1950-1971.

	Enrolment percentage of Boys			Enrolment percentage of Girls		
Educational Level	1950-51	1960-61	1970-71	1950-51	1960-61	1970-71
Primary School Stds. I - IV (4-11 years)	59.8	82.6	97.6	24.6	41.4	62.4
Middle School Stds. V-VIII (11-14 years)	20.7	33.2	47.3	4.5	11.3	20.7
Secondary School Stds. IX-XI (14-17 years)	8.7	17.5	30.1	1.8	4.3	10.9
Higher Education-General (17-25 years)	N.A*	N.A	5.8	N.A.	N.A.	2.2

* Break-up not available, the enrolment percentage for boys and girls was 1 0 in 1950-51 and 2.1 in 1960-61.

Sources : 1. Third and Fourth Five-Year Plans, Government of India.
2. University Grants Commission, Annual Reports
3. *Educational Statistics at a glance, 1971*, Statistics and Information Division, Ministry of Education and Social Welfare, Govt of India (mineographed)

ROADS TO WOMEN'S EQUALITY

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The road to women's equality has been long and weary and full of obstructions. Indian women can only hope that the blessings of Raja Ram Mohan Roy and Mahatma Gandhi, with which they set out on their long march to equity and equality will prove efficacious. For, the goal of having equality between the sexes in all areas that touch our lives is yet very far away, even though the Constitution proclaims equality between the sexes in all spheres of activity.

There are many paths that lead to this goal. For women, the most significant advance has been in the legal sphere. Legal reforms to improve the social condition of Indian women began with the abolition of *Sati*. Since then, the legal and social status of our women has changed beyond recognition. The latest Acts in the series of reformist legislation for women were passed two decades back when the Hindu Marriage Act, 1955 ; the Hindu Succession Act, 1956 ; the Hindu Minority and Guardianship Act, 1956 ; and the Hindu Adoptions and Maintenance Act, 1956, were passed giving to Hindu women a new charter of rights. Since then, however, with the sole exception of the Medical Termination of Pregnancy Act, 1971, no significant legislation has been enacted to improve the status of Indian women. (The Dowry Prohibition Act of 1961 is a dead Act.)

The typical nineteenth-century Indian woman was illiterate, ignorant and dependent. Her very life depended on her husband, for she was expected to end her life on his funeral pyre. She was, too weak even to resent this barbaric custom. It was left to a man, Raja Ram Mohan Roy, to raise the first banner of revolt against *Sati*, and *Sati* was ultimately prohibited by law. The Hindu women, however, continued to be economically and socially dependent on her male peers. She had no legal right to inherit any property from her father or husband. She could not earn a living as she was not equipped for it. The prevailing social conditions made it impossible for a woman to work outside the home. She had no time for it anyway as she was heavily burdened with continuous child-bearing and child-rearing. She was thus entirely dependent on her family for her sustenance and support.

Hindu law as originally propounded in the *Smritis* did not recognise a woman as an heir. Heirship was conferred strictly on the basis of religious merit. As a woman could not offer oblations to propitiate the souls of her dead ancestors, she could not inherit from them. Hence a widow could not inherit her husband's property. On his death she hoped to be maintained by her husband's family! To remedy this situation, the Hindu Women's Right to Property Act was passed in 1937. Under the Act, a Hindu widow became entitled to inherit her husband's property. The share given to her under the Act was the same as that of a son. She was, however, given only a life interest in this property so that on her death, the property reverted to her husband's heirs. A similar limited right of inheritance was also given to the widow of a pre-deceased son. But, no provision was made in the Act for a daughter who continued to be debarred from inheriting her father's property. It was only after the passing of the Hindu Succession Act, 1956, that a widow and the daughter of a deceased Hindu could inherit his property in the same manner and to the same extent as a son.

In a joint family, which is a typical feature of Hindu society, the daughters have a right to be brought up and married off suitably. But they do not have a share in the family property unlike the sons who get a share in this property by birth. Even the women who join the family by marriage—the wife and the daughter-in-law, get a share in this property only if they produce a son! Small wonder then if women enjoy an inferior social status.

Indian women of other communities are also discriminated against in a similar way. A Parsee daughter is given only half of what a Parsee son is given if their father dies intestate, i.e., without making a will. A Muslim daughter is also placed in a similar situation with this added disadvantage: Her father cannot normally increase her share by making a will because he cannot bequeath any property by will to somebody who is already an heir unless all other heirs consent to it after his death. He also cannot make a will for more than one-third of his property. So this is an obvious area where improvement is urgently required.

This inferior economic status of a woman affects all her activities including her enjoyment of other legal rights. Thus, though women have the right to take a divorce (Christian and Muslim women have some handicaps in this sphere), this right is availed of mainly by women who work outside their homes and are financially independent. A housewife who has no means of livelihood will not be in a position to take a divorce, however grave the need may be, unless she has the support of her parents or relatives. Though she is legally entitled to be maintained by her husband, in practice, it is not always easy to recover this amount from a defaulting husband. Similarly, her inability to maintain her children can also come in the way of her getting custody of her children.

A Muslim woman unfortunately suffers from greater legal handicaps than other women. Her husband can marry upto four wives and he can divorce his wife by pronouncing "talak" thrice without having to explain himself before a court of law. The law works a great hardship on a divorcee because a divorced Muslim wife is not entitled to be maintained by her ex-husband. She is paid only the *Mahr* amount stipulated in the marriage contract. In India, it is customary to provide only a small amount as *Mahr* in the marriage contract. As a result, a Muslim woman faces the prospect of becoming destitute on divorce.

These are some of the handicaps suffered by women in the legal sphere. The law does not give to women an equal right to inherit or acquire property and this inability or reduced ability to acquire money affects the enforcement of other legal rights by women. Hence the ultimate weapon which alone can give a woman the strength to fight and win equal treatment is economic independence. In the past, a woman found it difficult to learn and earn because throughout the known history of womankind she was tied down with the function of giving birth to children and bringing them up. A woman who had to bring up eight to ten children found little energy or ability left to do any work outside her home. It is no coincidence then that only after a breakthrough was made in the area of birth control, that the demands of women for equality became more vociferous and effective, culminating in the United Nations adopting women as "objects of international concern". It is only with the uplifting of this biological burden that women's hope for equality can turn into a reality.

It is in this context that the Medical Termination of Pregnancy Act, 1971, assumes importance. It gives to a woman the right to terminate her pregnancy even without the consent of her husband (if she is married) subject to certain medical safeguards. This Act, coupled with family planning facilities now available to women, ensures that a woman can plan to have or not to have children; and can also plan when to have them. A woman can thus curtail her commitment to her home and children and find time to earn outside her home. The Act therefore is a milestone on the road to women's freedom and equality.

It is a pity that no systematic demand has yet been made in our country for conferring on women equal legal rights in the field of personal law. Legal reform in our country has frequently preceded social reform, and law has often paved the ground for a change in social norms. The absence of this first demand leading to equality in the social sphere indicates a lack of effort for the improvement of the social status of women. One, however, hopes that with increasing economic opportunities for women, they will be able to bargain for equality from a position of strength and win it, however long the struggle.

> "Women's liberation is not a luxury for India, but an urgent necessity to enable the nation to move ahead to a life which is more satisfying materially, intellectually and spiritually."
>
> —*Indira Gandhi*

RIGHTS OF INDIAN WOMEN

In the nineteenth century, the social reform movement brought a new awakening among our women, who at that time, suffered many indignities and many humiliating practices. In the late nineteenth century, the women's reform movement merged with the struggle for freedom. This brought women out of their homes and opened new vistas of activity and responsibility before them.

In 1947, India became a sovereign democratic republic and on 26th November 1949, the nation gave itself a Constitution which conferred equality of status and opportunity to women. The Constitution says:

FUNDAMENTAL RIGHTS

Right to Equality

Article 14: Equality before law

The State shall not deny to any person equality before the law or the equal protection of the laws within the territory of India.

Article 15: Prohibition of discrimination on grounds of religion, race, caste, sex or place of birth

(1) The State shall not discriminate against any citizen on grounds only of religion, race, caste, sex, place of birth or any of them.

Article 16: Equality of opportunity in matters of public employment

(1) There shall be equality of opportunity for all citizens in matters relating to employment or appointment to any office under the State.

(2) No citizen shall, on grounds only of religion, race, caste, sex, descent, place of birth, residence or any of them, be ineligible for, or discriminated against in respect of, any employment or office under the State.

DIRECTIVE PRINCIPLES OF STATE POLICY

Article 39: Certain principles of policy to be followed by the State

The State shall, in particular, direct its policy towards securing:

(a) that the citizens, men and women equally, have the right to an adequate means of livelihood;

(d) that there is equal pay for equal work for both men and women;

(e) that the health and strength of workers, men and women, and the tender age of children are not abused and that citizens are not forced by economic necessity to enter avocations unsuited to their age or strength ;

(f) that childhood and youth are protected against exploitation and against moral and material abandonment.

Article 42 : Provision for just and humane conditions of work and maternity relief

The State shall make provision for securing just and humane conditions of work and maternity relief.

Article 44 : Uniform civil code for citizens

The State shall endeavour to secure for all citizens a uniform civil code throughout the territory of India.

ELECTIONS

Article 325 : No person to be ineligible for inclusion in, or to claim to be included in a special, electoral roll on grounds of religion, race, caste or sex.

Article 326 : Elections to the House of the People and to the Legislative Assemblies of States to be on the basis of adult suffrage

EDUCATION AND EMPLOYMENT—KEYS TO SMALLER FAMILIES

Ms RUTH B. DIXON

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Education

Women's rights and current reality

Equal education has proved to be an elusive goal even in countries where equality under the law is guaranteed. Illiteracy rates in most countries are much higher among women than among men although the situation is improving. On the average, in countries for which information was available for the 1960s or early 1970s, females aged 15 and over were around 54 per cent as likely as males to be literate in Africa, 58 per cent in Asia, 94 per cent in the Americas, 97 per cent in Oceania, and 88 per cent in Europe. Sex differentials in literacy were somewhat lower among the 15-19-year-olds than among the population at large.

Females are less than half of the school population in most countries, and the proportion of females declines rapidly at the highest levels of training. In 1960-70, females aged 5-14 were, on the average, approximately 79 per cent as likely as males, the same age to be enrolled in school in Africa, 79 per cent in Asia, 100 per cent in the Americas, and 98 per cent in Europe. But by ages 20-24, the ratio of female to male enrolment rates was only 15 per cent in Africa, 44 per cent in Asia, 65 per cent in the Americas, and 57 per cent in Europe.

Within educational institutions certain fields of study are often strongly typed as appropriate for females or males only, although the degree of sex-typing varies considerably across countries. In many countries, and particularly in rural areas, the underrepresentation of girls and women in schools is compounded by an overall scarcity of schools and teachers that places females at an even greater disadvantage relative to males in the competition for access to these educational resources. Decisions within both the educational institution and the family may be especially likely to favour schooling for males over females when there is insufficient room for all. This discriminatory factor, however, seems to operate more intensely in parts of Asia and Africa than in Latin America even where schools and teachers are equally scarce.

Female education and fertility

What effect does the ability to determine the number and spacing of one's children have on the exercise of a woman's right to an education and to equal treatment in the schools at all levels ? Delaying the onset of child-bearing, either by postponing marriage, or *de facto* unions, or by postponing the first birth within marriage, is the aspect of fertility regulation most relevant to the issue of equal rights in education. Postponing the first birth does not have a uniform impact on a woman's opportunities for vocational training or for secondary, college, or university education in all countries. The impact is likely to be greatest in those countries or among socio-economic groups in which the probability is initially high that a woman will pursue an education beyond the normal age for the first years of childbearing and in which the birth of a child would effectively limit her chances of staying in school. Childbearing would presumably disrupt higher education less in those countries and among socio-economic groups in which mothers feel fewer cultural pressures to stay home with their children and where child-care assistance is more readily available.

In societies in which women marry and bear children early, and in which virtually all women marry, the obstacles to a woman's exercise of her right to an education may not be her lack of knowledge or means to plan and space children so much as the social, economic, and cultural pressures that steer her into an early marriage in the first place. Parental control over the decision as to which of their children will attend school, and when and whom their children will marry, may preclude a young woman from making an individual decision that attaches a higher priority to education than to early motherhood. On the other hand, a woman may more readily exercise her ability to delay marriage or a first birth as higher education for women becomes more generally accepted and valued.

Spacing pregnancies, limiting the number of births, and ending childbirth earlier in the life cycle could also act independently to free women for formal schooling of various types. These variables, however, probably have a weaker impact on education than does postponing the onset of motherhood, although they may affect women's attendance at adult literacy classes. In the long run, one would expect that as women increasingly delay, space and limit their births, spending shorter and shorter periods of their lives in childbearing their claim to equality in education will become all the more persistent. But education itself may be the very precondition necessary for motivated birth planning.

Is it possible to untangle the network of interchanging variables into cause and effect? On one side, early marriage itself or in combination with childbearing can prevent education by forcing or inducing women to discontinue their studies. Thus, where other structural and cultural conditions favour higher education for women, the effective postponement of marriage and births is often crucial to the exercise of their rights in this area. On the other side, education can prevent marriage and childbearing or postpone them beyond the average age of family formation as long as the woman stays in school. From a demographic point of view the effect of education on reproductive behaviour is the more interesting aspect of the association. Indeed, the educational level of women appears to be one of the strongest factors affecting fertility, especially in high fertility countries.

The relationship is not a simple one, however, nor is it inverse in all cases. The question is how, and under what conditions, does a woman's education make a difference?

It may be that the number of years of formal schooling is simply the most and quantifiable element in a cluster of interdependent forces affecting fertility and that it is not higher education *per se* but its association with factors such as openness to new ideas, higher standards of living, exposure to an urban environment, and a greater range of options and interests outside the home that is responsible for the apparent influence of education on fertility. Nevertheless, most studies show that the educational level of the wife is more strongly correlated with a couple's fertility than the educational level of the husband suggesting that, however the causal mechanism works, investment in female education may have a greater impact on fertility than the same investment in schooling for men.

Higher education for women can work indirectly to reduce fertility in at least three ways: (1) by delaying marriage and increasing the probability of non-marriage, thus reducing or eliminating the time span of exposure to the possibility of conception (assuming either a low probability of sexual contact outside of marriage or a high degree of birth control); (2) by reducing desired family size by creating aspirations for a higher level of living for the couple and their children and by stimulating women's interest and involvement in activities outside home, especially employment; and (3) by exposing women to knowledge, attitudes, and practices favourable to birth control, including a higher level of communication between husband and wife that would enable them to bring their actual reproduction in line with their desired family size.

In response to what appears to be increasingly homogeneous behaviour across socio-economic groups in industrialised countries regarding average age at first marriage, desired family size, and knowledge and practice of birth control, the inverse relationship between education and average family size in Europe, the United States, Canada, Australia, and New Zealand has diminished over the past several decades. It has not disappeared, with the exception that in some countries, above a certain income level, women with the most schooling have larger families on the average than women in the same income group with somewhat less education. This behaviour results in a slightly U-shaped overall relationship between education and family size.

In most developing countries, the education of women appears to have a very strong impact on family size. But where higher education is confined to a small elite, its impact on overall birth rates is slight. Even the transition from illiteracy to literacy resulting from very low levels of schooling is shown to have some influence on family size in many developing countries. The rare exceptions, in which illiterate rural women have lower birth rates than women with some primary schooling, appear to be caused by subfecundity among the least educated group. Studies in many developing countries also show that women with high school and higher education marry considerably later, are less likely to marry at all, desire smaller families, and are far more likely to know about and practice modern effective methods of contraception than are less educated or illiterate women.

Yet, the majority of women of reproductive age in a number of developing countries, especially in rural areas, are illiterate and without effective options regarding marriage and childbearing. Indeed cultural pressures toward high fertility in rural areas may be so strong as to obliterate entirely the effect of six or eight years of schooling on reproductive behaviour. For example, in the rural areas of Turkey employed women and women with primary or higher education did not have smaller families on the average, while in urban areas family size varied clearly by the level of female education. Finding similar situations in Latin America, Stycos* suggested that a certain amount of urbanization may be necessary "to activate the effect of education on fertility."

Finally, a high level of education may not motivate the woman to want a smaller family if her training does not lead to active participation in employment outside the home. In most countries, higher education does increase the probability of a women's employment. It would not be surprising to find the most highly educated women who are not employed outside the home having families the same size, or larger than women with less education who are employed, and indeed this may explain the U-shaped relationship between education and family size in a few industrialised countries. Not only the number of years of schooling, but also the type or quality of schooling can make a difference. Women trained in fields traditionally thought to be female are shown in some studies to have higher fertility than women in less "feminine" fields with equal or fewer years of schooling.

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* Stycos, J. M., 1968. *Human Fertility in Latin America* Ithaca · Cornell University Press.

Similarly, female employment itself may not influence fertility significantly unless a woman's education has prepared her for something more than subsistence agricultural labour, unpaid work in a family enterprise, or other low status, low-paying jobs. The interaction between the type and duration of a woman's education, on the one hand, and the probability and nature of her employment, on the other hand, must be more clearly specified in differing social settings before the independent effects of education and employment on reproductive behaviour can be fully understood.

Employment

Women's rights and current reality

International instruments declare that everyone has the right to work, to free choice of employment, to just and favourable conditions of work, to protection against unemployment, to fair remuneration, and to equal pay for equal work. Women, married or unmarried, are to have equal rights with men in this regard. In addition, in order to eliminate other forms of discrimination against women in employment, measures are to be taken to prevent their dismissal in the event of marriage or maternity, to provide paid maternity leave with the guarantee of returning to former employment, and to provide child-care facilities and other necessary social services.

In most countries, women are far from achieving equality in employment with men. General conditions of unemployment, under-employment and low wages where they occur, adversely affect both men and women, of course. But women often find it particularly difficult to exercise their right to equal work and equal pay.

Conditions vary from country to country according to their culture, socio-economic structure, and level of development. In general, however, women are less likely to be gainfully employed outside the home than are men, although they may be engaged in equally heavy unpaid domestic or agricultural labour. Among countries for which information is available, the percentage of females of all ages who were defined as "economically active" in censuses taken from 1960-1972 averaged approximately 26 per cent in Africa, 22 per cent in Asia, 18 per cent in the Americas, 16 per cent in Oceania, 45 per cent in the Soviet Union, and 30 per cent in Europe. Muslim countries showed the lowest rates of female economic activity, frequently under 5 per cent, while a number of tropical African countries, the eastern European countries and the Soviet Union showed the highest rates, over 40 per cent. In proportion to male economic activity rates, female rates averaged 53 per cent in Africa, 43 per cent in Asia, 36 per cent in the Americas, 31 per cent in Oceania, 86 per cent in the Soviet Union, and 51 per cent in Europe. Women are also more frequently classified as unemployed and looking for work than are men in many countries. Female earnings often average only a fraction of male earnings even when other factors such as type of work, education, training, and experience are taken into account. Almost everywhere one finds women in the paid labour force disproportionately concentrated in lower-status, lower-paying jobs.

Most employers do not provide paid maternity leave or guarantee return to former employment after childbirth, and childcare facilities in most countries are inadequate to meet the needs of working parents. In developing countries that lack the capital for elementary schooling and in which high rates of unemployment and underemployment prevail, paid maternity leaves and child-care centres remain an unattainable luxury. Indeed. the argument is often heard that women would be even more severely discriminated against under these economic conditions if employers were required to provide special services for them. There can be little doubt that the lack of such facilities does act as a strong constraint on women's exercise of their right to gainful employment in most countries.

Rates of male gainful employment vary little from country to country or through the normal working years in the life cycle. In contrast, rates of female employment differ enormously across nations and within major subgroups of the population, usually follow well defined patterns by age, and generally fluctuate according to women's marital status and the number and spacing of their children.

Female employment and fertility

The major problem in analyzing the relationship between variations in female employment and fertility derives from the difficulty of distinguishing cause and effect, as in the case for education. Does the opportunity or need to work actually influence women to have fewer children, or is it more often the case that women who have fewer children for a variety of reasons are free to take outside employment? The relative weight given to one factor over the other depends on unique situations in every country, but it is possible to make a few generalisations.

Where cultural and structural conditions are conducive to female employment and where worker-mother roles are incompatible, one can point to the considerable advantages that women practising effective birth planning have over those who accept early and frequent childbearing as inevitable. Delaying marriage and the first birth may enable women to complete their education and vocational training so that they are qualified for more highly skilled jobs or to establish themselves in a profession, if such options are open to them. Marriage itself, apart from childbearing can reduce women's participation in the labour force to a large extent.

Controlling the timing of births permits women to combine employment and childbearing in the least disruptive way. Keeping family size small frees women to work who might otherwise be overwhelmed by domestic responsibilities, especially in those countries where child-care assistance is scarce. The effect of the number of children on labour force participation depends of course on the ages of the children, with the relationship often disappearing once the children are older or leave home. Finally, having the last child early in the life cycle eases the burden on women working away from home and may encourage those who have stayed at home to reenter the labour force.

Viewed in this light, the exercise of the right to determine the number and spacing of her children can have a direct impact on a woman's exercise of her economic rights. On the other hand, there are circumstances in which an individual woman may not be able to improve her chances in the labour market by delaying, spacing, or limiting her births. In many areas, opportunities for women in employment are few or women are discriminated against on the assumption that they are (or will be) married and have children and, therefore, have less right to a job or an income than a man.

The other side of the coin is this: to what extent might the full exercise of women's rights to equality with men in employment influence the number and spacing of their children? If a consistent causal effect were to be found, the implications for development strategies would be clear: ensuring women's right to equal work and equal pay would reduce birth rates while simultaneously facilitating economic and social development. However, the relationship depends not on the simple fact of gainful employment but on such factors as the sector of the economy in which the woman is employed ; her occupation, income, and work commitment; the duration or continuity of employment, whether it is full- or part-time ; and the availability of child care.

Most research has focussed on the concept of role incompatibility in attempting to explain variations in the strength of the association between female employment and fertility. The more mutually exclusive are the roles of worker and mother, the more likely it is that gainfully employed women will remain childless or have smaller families, than non-employed women. According to this theory, female employment would reduce fertility most effectively when birth planning is widely practised and when the roles of worker and mother are most incompatible.

It is mainly in the industrialised countries that the relationship between female employment and fertility seems most clear when currently employed and non-employed women are compared, although historical studies have shown that major declines in the birth rate have often preceded the expansion of women's labour force participation. Women who are employed full-time, or those who work for a major part of their lives, or are in white-collar and professional occupations, and who have a high degree of work commitment usually tend to have smaller families, or remain childless. In rural areas of industrialised countries, however, where traditional agricultural labour is not so incompatible with raising a family, the relationship between female employment and fertility often disappears.

In most developing countries, the employment-fertility relationship is less clear, although as in the case of industrialised countries, a distinction must be made between urban and rural areas and between modern and traditional sectors of the economy.

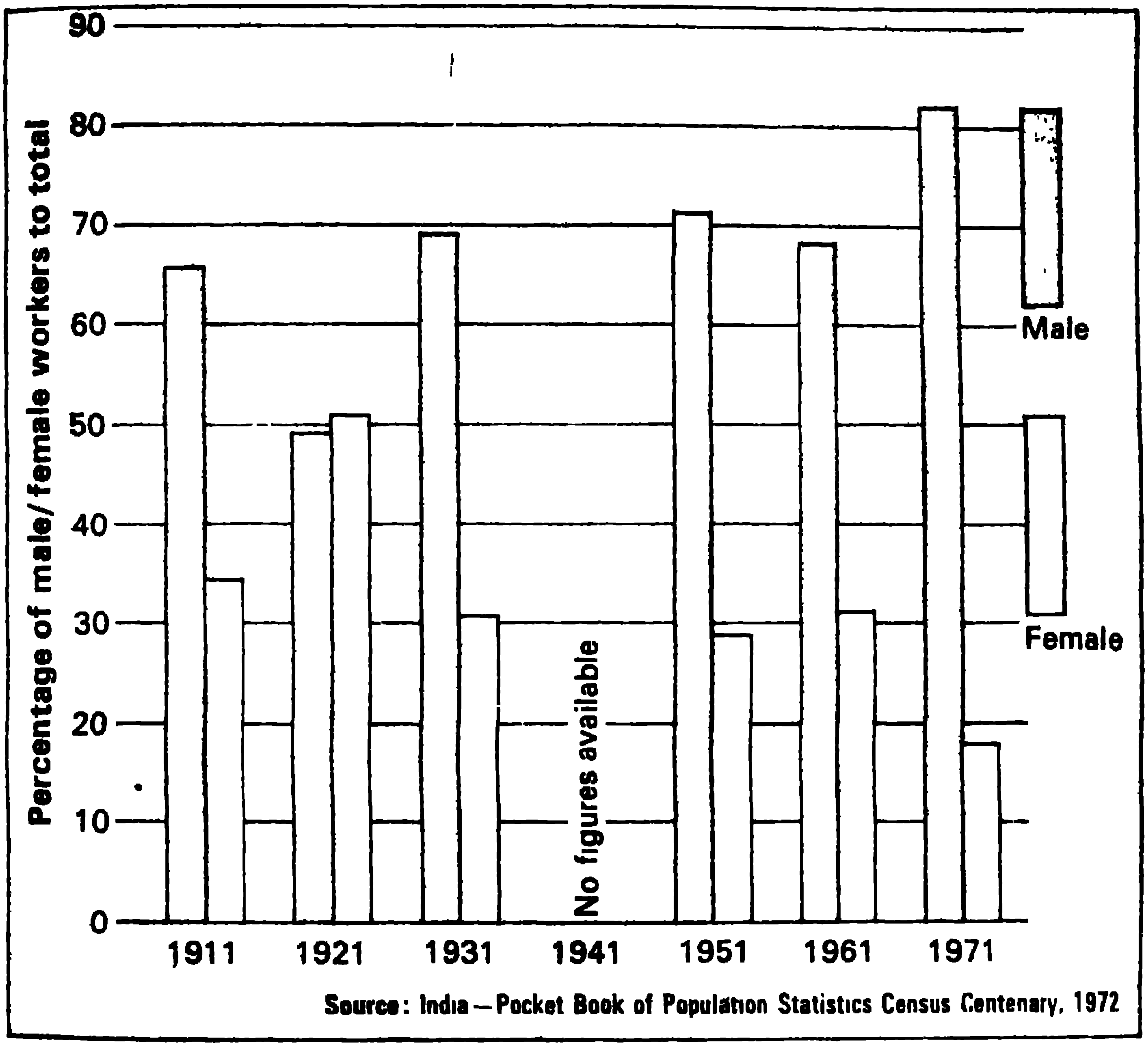
In rural areas in developing countries, paid employment (where it exists) usually has little impact on fertility partly because the value of large numbers of children often remains strong and partly because the employment is likely to be an agricultural, marketing or cottage industry type in which a woman may either keep her young children with her while she works or leave them with other family members. The same reasoning holds true for women who are engaged in unpaid production.

In urban areas, on the other hand, a woman's paid employment is more likely to be incompatible with raising a family if it takes her out of the home and if she has difficulty in finding ways to care for her children. She is also more likely to learn about birth control and have access to family planning services in urban than in rural areas, although much depends on the sector of the economy in which she works. For example, some studies in urban centres of developing countries have shown that women in the professions and in white-collar occupations are more favourably disposed toward the use of contraceptives and have fewer live births than skilled manual workers, who, in turn, have smaller families than women in the sales, trade, or service sectors.

Generally speaking, however, the opportunities for labour force participation of women in non-agricultural sectors of the economies of developing countries have been extremely limited. The experiences of many African countries and of India, for example, show that rural-urban migrations accompanying development frequently deprive women of their formerly productive role in agriculture, handicrafts, or marketing, without offering a substitute role in the modern sectors of the towns, where unemployment is usually high. Under these marginal conditions, one would not expect urban birth rates to decline rapidly. When the development effort is heavily capital-intensive rather than labour-intensive, women may find it particularly difficult to compete with men for mechanised, male-typed jobs.

The issue of the possible influence of maternity and child-care benefits on the fertility of working women is both highly relevant and controversial. According to the role imcompatibility theory, if employment and motherhood were to become more compatible, working women might be encouraged to have more children as the material and energy of additional reproduction were reduced. On the other hand, one could argue that, where lack of maternal or child-care benefits keeps many women at home who would otherwise seek employment and become exposed to the antinatalist influences that employment so often entails, the fertility of non-working women may be increased. The gaps in our knowledge suggest that extensive research on the demographic impact of maternity and child-care benefits is badly needed. As a policy matter, however, the principle remains that women's right to these benefits is clearly stated in international instruments and cannot be abrogated for reasons of demographic expediency.

WOMEN AND WORK

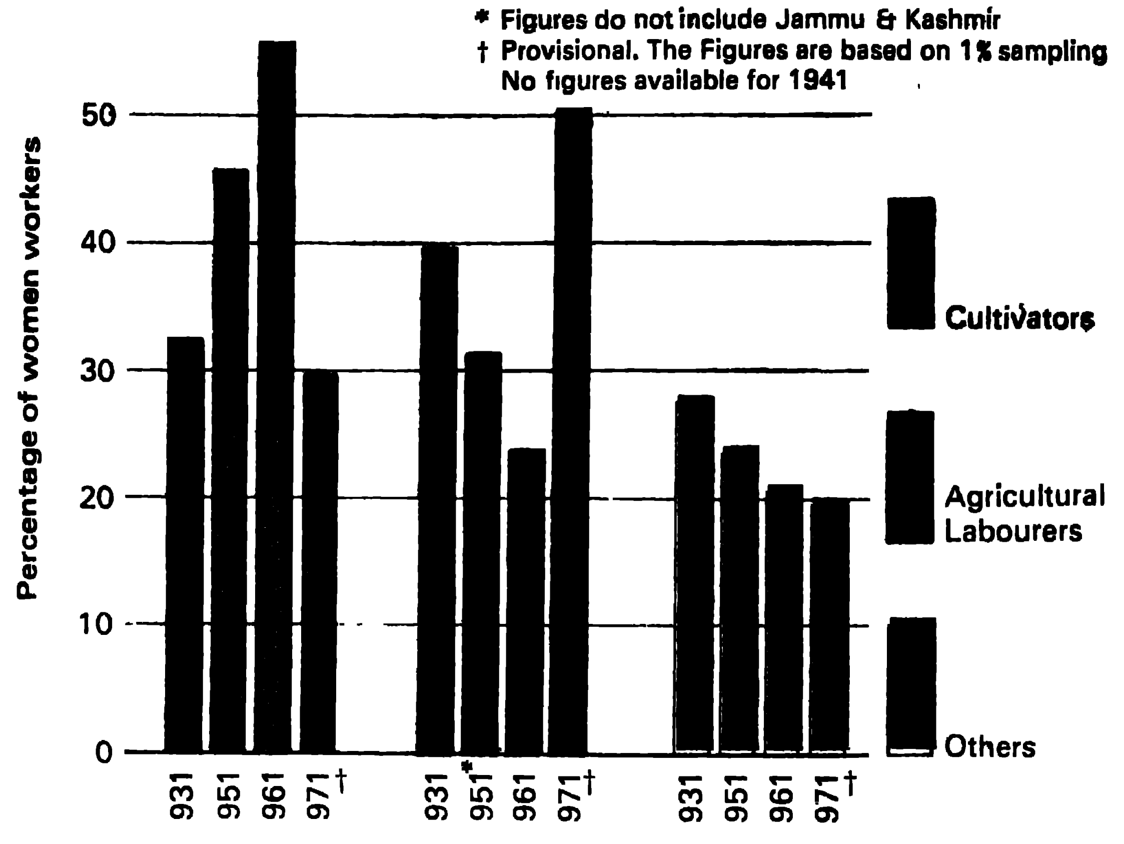


Source: India—Pocket Book of Population Statistics Census Centenary, 1972

The Indian Constitution guarantees equality of opportunity in matters relating to employment. Our country's labour laws provide for the protection and welfare of working women through the provision of maternity benefits, creches, and restrictions on certain types of work unsuitable for women.

The Government has been endeavouring to throw open more and more employment opportunities to women. And yet, women represent only 17.3% of the national labour force. Their economic participation which reflects the structural features of the Indian economy and society, has been declining since 1921, in terms of the percentage of women workers to both the total female population and to the total labour force.

Percent distribution of female workers to total female workers by broad industrial categories, 1931-71



Source 1 Census of India 1961 - Paper no. 1 of 1962 - Final Population Totals
2 India Pocket Book of Population Statistics Census Centenary, 1972

Others' include all other categories mining & quarrying livestock, forestry plantations, hunting, orchards & allied activities manufacturing, processing, servicing & repairs construction, trade & commerce, transport storage & communications and others

Of the 31.3 million women workers (1971 Census) in the country, 10% are in agriculture, about 10% in industries and the rest in tertiary occupations. As many as 87% of the agricultural workers are rural-based and, considering the low levels of literacy and agricultural technology in rural areas, they are in all likelihood illiterate or barely literate. Unpaid family workers whose contribution to the family's economy is not recognised, constitute 40-49% of the female and 15-17% of the male labour force.

A sharp decline in women cultivators and a concomitant increase in women agricultural labours was registered during 1951 to 1971, indicating a decline in the level of employment. In the organised sector, the number of women workers has increased to 11% of the total labour force. However, while the total employment has been increasing in industries, female employment has declined by 21% during this period. Also, tertiary occupations, which include services, absorb only 10% of women workers, though more and more educated seek employment. The employment exchange statistics show that between 1964 and 1968, the number of women job seekers increased by 81% while that of men increased by only 14%. For job seekers with matriculation and higher education the increases were 116% for women and 72% for men. It is noteworthy that more women with technical rather than non-technical training in both rural and urban areas have jobs. Also, in urban areas work participation increases with higher education and training with a concentration of women in the medical and teaching professions and a striking wastage in engineering, agriculture and veterinary science.

The exercise of the right to determine the number and spacing of her children can have a direct impact on a woman's exercise of her economic rights.

The relationship between female employment and fertility seems to be most clearly evident in the industrialised countries. Women who are employed full-time or those who work for a major part of their lives, or are in white-collar and professional occupations, and who have a high degree of work commitment, usually tend to have smaller families, or remain childless. In rural areas of industrial countries, however, where traditional agricultural labour is not so incompatible with raising a family, the relationship between female employment and fertility often disappears.

In most developing countries, on the other hand, the employment —fertility relationship is less clear. In rural areas of developing countries, paid or unpaid employment normally has little impact on fertility partly because the value of a large number of children often remains strong and partly because the nature of the job is such that the woman may either keep her children with her while she works or leave them with other family members. In urban areas, on the contrary, her worker and mother roles are more likely to be incompatible. There is also more likelihood of her learning about birth control and having access to family planning services, although much depends on the sector of the economy in which she works.

SAFE LANDMARKS FOR HUMAN REPRODUCTION

DR. ABDEL R. OMRAN

Dr. Abdel R. Omran is from the University of North Carolina. This article is excerpted from World Health, *the magazine of the World Health Organisation, January 1974.*

World-wide experience indicates that effective family planning can favourably influence the health, development, and well-being of families and individual family members in many ways:

1. By making it possible to plan family size, i.e. by enabling every couple to have the number of children considered best in terms of health, socio-economic resources, and family goals. Four health objectives should be considered in planning family size:

   a. To lower levels of fetal, infant, and childhood mortality and sickness.
   b. To improve the physical, mental, and intellectual development of children.
   c. To secure the health and life of the mother.
   d. To enhance family health and adjustment.

2. By planning birth intervals, to improve maternal health and child development and well-being.

3. By making it possible for women to have children at the ages at which pregnancy carries the least risk for the mother and the best chance of successful outcome—a matter of particular significance with regard to the first and last pregnancy.

4. By making it possible to avoid unwanted births, whether legitimate or illegitimate.

5. By preventing abortions, especially high-risk (illegal) abortions.

6. By making it possible through genetic counselling for couples with hereditary diseases or handicaps to avoid passing them on to their children.

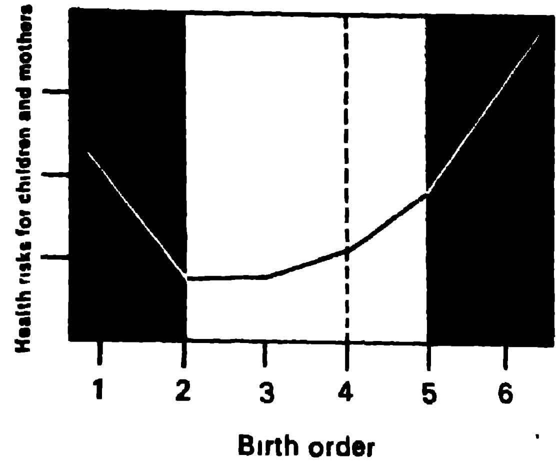
Enabling couples who are involuntarily infertile to achieve their desired family size within the health and social context is also an integral function of family planning.

Family planning, from the health point of view, then, is not merely the regulation of the number of children, but it is also the appropriate spacing, the timing (in such a way that children are conceived at the least risk to the mother's life and health), and the assurance that each child shall be wanted and prepared for. Family planning should, by definition and objective, include treatment and prevention of infertility as well as fertility control.

Even though the responsibility for family planning lies mainly with parents, it also lies with the medical profession and health services planning, and daily professional practice.

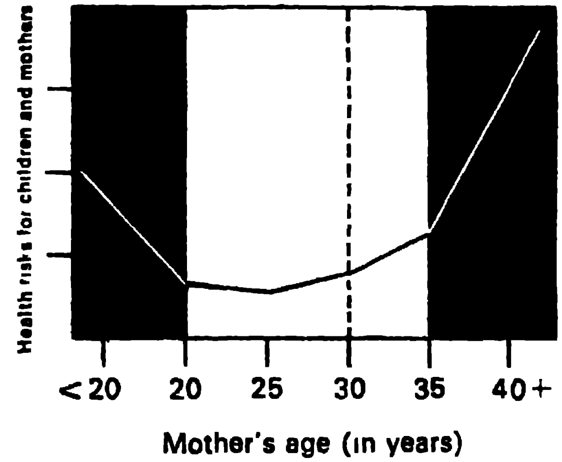
Number of children
higher risks for 1st, 4th and over

safest: 2 or 3



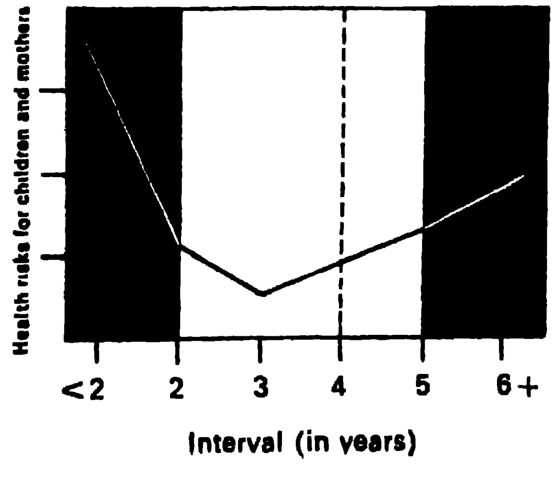
Pregnancy spacing
higher risks under 2 and over 5 years

safest: 20 to 35 years



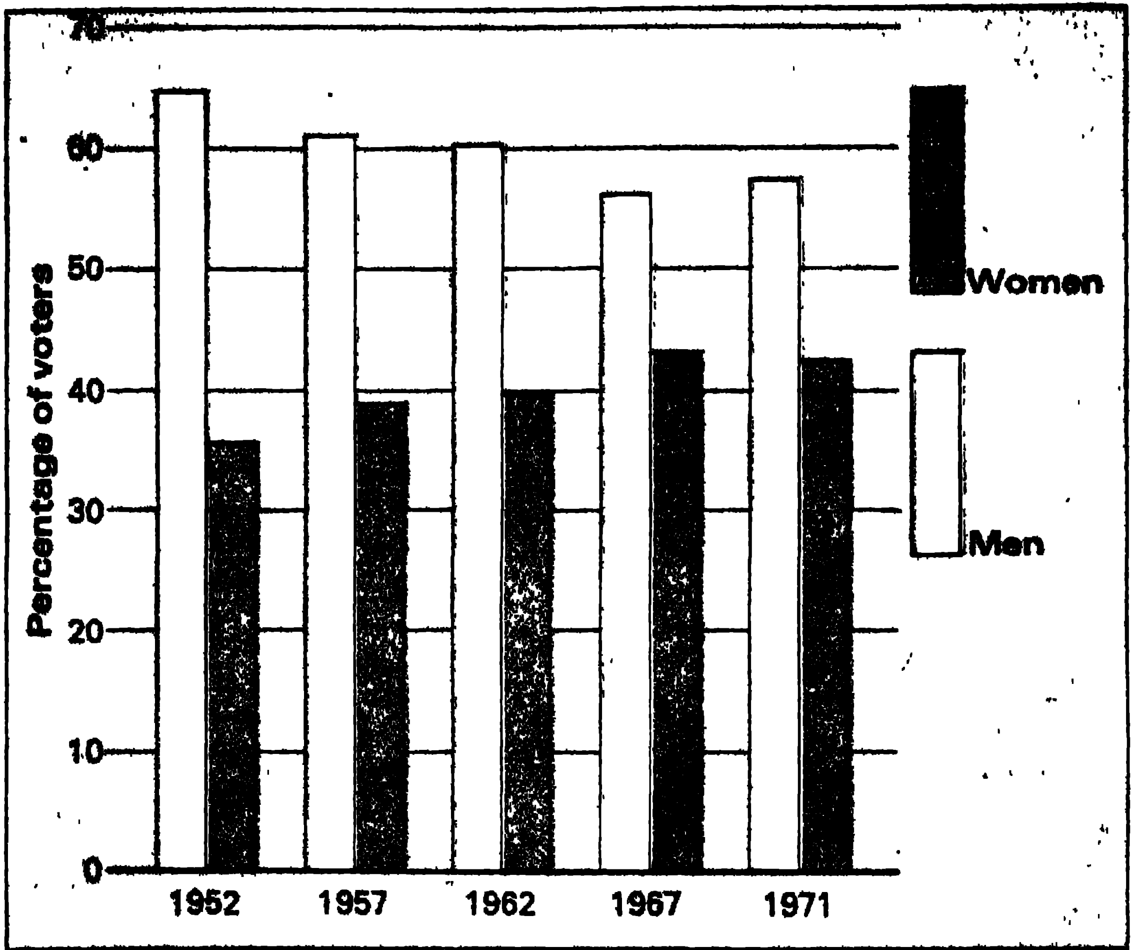
Pregnancy timing
higher risks under 20 and over 35 years

safest: 2 to 4 years



Safe landmarks for human reproduction

Percentage of voters to total voters

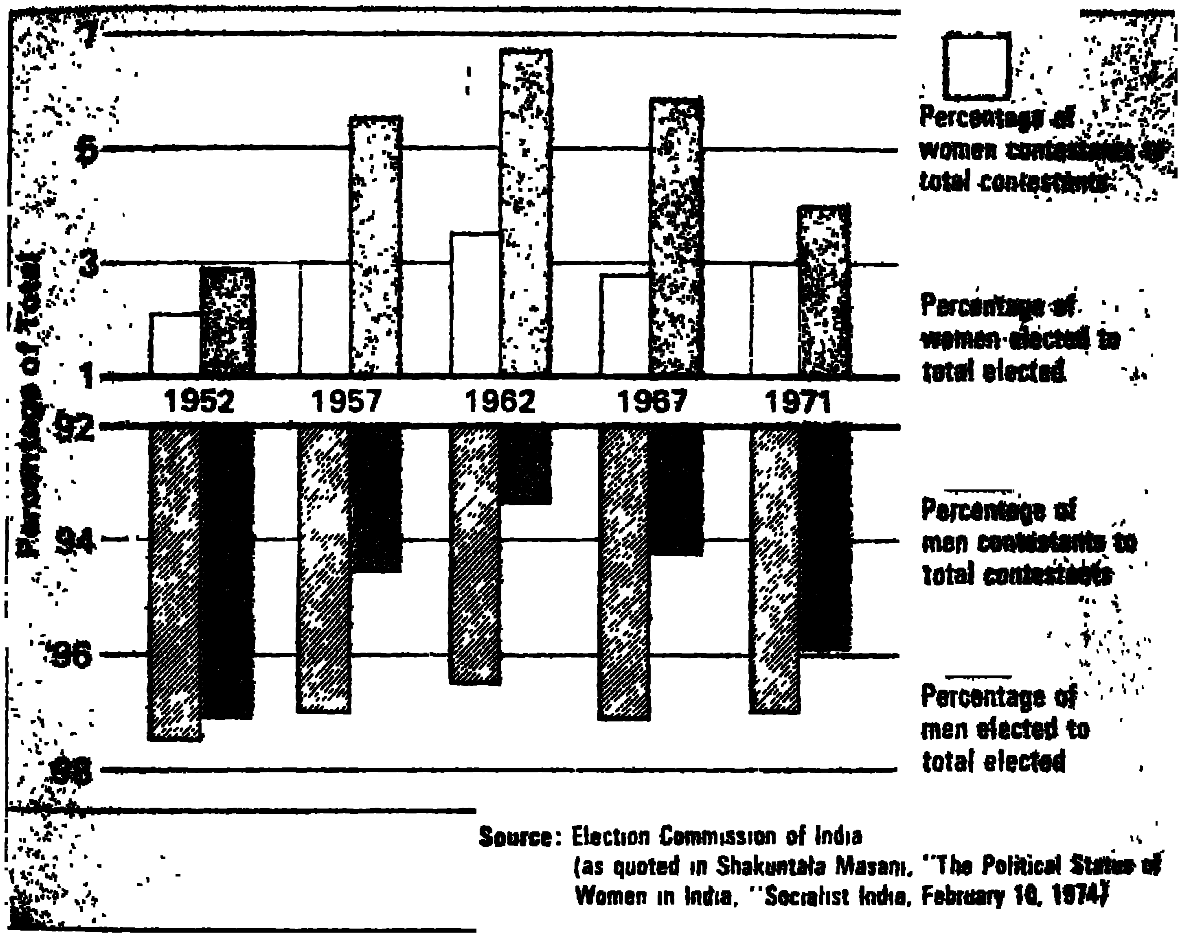


Source: Election Commission of India. (as quoted in Shakuntala Masani The Political Status of Woman in India, "Socialist India, February 10, 1974.)

The contribution of Indian women to the freedom movement was as great and as significant as that of men. In response to Mahatma Gandhi's call, women at all levels of society left the seclusion of their homes to take part in the freedom struggle. Women had won the battle for franchise too, before Independence, though on certain conditions.

The increasing political participation of women is reflected in the increase in the number of women voters from 28.7 million in 1952 to 64.2 million in 1971, and the steady decrease between the voting turnout of men and women. Even so, they still have a long way to go. In India, as in many other countries, no significant advance seems to have been achieved at various levels of political participation, since women secured the right to vote. Their

Percentage of contestants/elected to corresponding totals by sex



Source: Election Commission of India
(as quoted in Shakuntala Masani, "The Political Status of Women in India," Socialist India, February 10, 1974)

non-participation in the political sphere seems to be mainly due to the fact that politics is male-dominated and that it dislocates domestic life. Consequently, though Indian women actively participate in the elections as far as voting is concerned, at the policy-making level they are not adequately represented and involved.

Today, we have 21 women Members of Parliament out of a total of 564 in both Houses. There are 154 women amongst the 3,747 members of State Legislatures.* Indian women contestants to the Lok Sabha do not constitute even 4 per cent of the total contestants. However, the striking fact is that the percentage of women elected to the total number of persons elected has always been higher than the percentage of women contestants to the total contestants. The chances of women being elected therefore appear fairly bright if more of them could be able to contest elections in their own right.

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* Since 1952, 212 women have served in the Indian Parliament—129 in the Lok Sabha and 83 in the Rajya Sabha

NEED FOR ADAPTATION*

DR. MANUEL CARBALLO

Division of Family Health, World Health Organization

Although the family has existed throughout history, is still found today in all known societies, and continues to be the single most influential social environment for human development, the changes that are now occurring to the family and the implications these changes may have for health are giving rise to considerable concern.

Numerous arguments have been put forward to explain what is happening. Some have claimed that the family has proved particularly vulnerable to the pressures of changing social conditions and has been weakened. Others have argued that the family has simply shown an evolutionary ability to adapt and mould itself to fit the requirements of modern systems of life and behaviour.

Whatever the appropriate explanation, it is clear that as society has become more urbanized, and as urban life in turn has become increasingly complex, so the patterns of family formation have changed.

From various parts of the world comes evidence that the traditional extended family which, in its various forms, appears to have been a relatively universal phenomenon, is gradually being replaced by the nuclear family. The unit is becoming smaller, more remote physically and economically from other family groupings and, in terms of many of its functions, it is moving toward a shorter life span.

What is the significance of these changes and what are their various implications for the health of the family, its members and society in general ? The answer may be found in part by examining the different functions which the family traditionally fulfilled in the past and which are now, as a result of its emerging structure, being increasingly delegated to non-familial bodies to perform or, all too often, are simply being neglected.

Throughout history the family has played a unique and fundamental role. With relatively few exceptions, it has provided, for example, the most effective and socially appropriate millieu in which procreation could take place, and in which the physical and emotional development of children could be ensured. Through the routine responsibilities and interaction of its adult members, it has constituted an environment in which offspring could be gradually exposed to, and instructed in the values and customs considered necessary for integration into society; at the same time it has provided a source of informal control over their activities. For older members it has represented a source of emotional and economic support as they themselves pass through their life phases.

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* From *World Health*, January 1974

From the time of conception and birth, through childhood, adolescence, parenthood and old age, the family has been an intermediating force between the individual and his community. It has been the forum in which the major part of the significant life experiences are encountered and coped with. Within the framework of the family, for instance, the individual has been exposed for the first time to the concept of illness, has learnt how to adapt to it and, more importantly, has been assisted through it. In many respects, the family has traditionally constituted a unique unit of primary health care, a front line in the sequence of education, prevention, diagnosis, treatment and rehabilitation of its constituents. And indeed to a significant percentage of the world's population for whom alternative health strategies are not available, or to whom new approaches do not always prove acceptable, the family still remains the only viable health care resource.

Changes and pressures on the family disrupt many of the relationships that are required if these functions are to be performed adequately. Just as the family has potential to act as a unique agent of therapeutic intervention, so changes or a temporary disequilibrium in its structure can actually generate problems for the physical and psychological well-being of its individual members. With this in mind a number of areas of concern have emerged in recent years.

Child care

The transistion to the smaller nuclear type family has coincided with the increaesd involvement of women in the labour force. This has often curtailed their continued care of small children. In the absence of elder parental figures and female relations, who in many societies assumed automatic responsibility for children, child care has been increasingly delegated to extrafamilial, professional or quasi-professional bodies. To a great extent these organizations have in part replaced many of the roles of the mother and of the extended family. Nurseries, kindergartens, day centres, whether provided by the State, industry or private organizations, have allowed mothers to follow active working lives or simply to liberate themselves from traditional female roles and seek further self-development.

But the widespread dependence upon day centres has raised certain questions about the effects of maternal deprivation on child development. Attention has been focused on the fact that, while these organisations have been meant to replace maternal care, they have in some instance done little more than simply provide shelter, supervision and basic educational training ; they have not been able to give the type of individual care and attention that is basic to healthy physical and psychological growth.

. Even if centres that are optimally planned, staffed and administered can genuinely meet the needs of the child and provide a satisfactory alternative to the mother, it remains true that these standards are difficult to meet and still more to maintain. Availability and training of staff varies widely between and within different countries, and physical facilities—playrooms, sanitary arrangements and educational play materials—are all conditioned by different economic and social factors whch are difficult to control. The costs of care, when this is not provided by State or industry, often put them beyond the reach of the population at large.

Adolescence

The question has been asked "Can the nuclear family in transitional and highly urbanized and industrial societies really attend to the many different needs of the adolescent ?" An age group that has been relatively neglected, adolescent are now acknowledged to have quite specific health needs, particularly with respect to sexual behaviour and reproductive health. Their vulnerability to sexually transmitted diseases, unwanted pregnancy and illegitimacy has been epidemiologically established in many different countries, but particularly in those areas where society is undergoing rapid and fundamental changes. In developing regions of Africa, for instance, it has been pointed out that few mechanisms have been developed to replace the intricate relationship that previously existed between the socialising functions of the family and the social rituals which its members observed and which provided specific guidance and control. Meanwhile, in the highly industrialised societies of Europe and North America, studies have indicated that many adolescents are unable to discuss important questions concerning reproduction with their parents, and therefore embark on sexual relationships relatively unaware of their consequences. Educational institutions, upon whom the responsibility for preparing young people for adulthood has been increasingly placed, have themselves been unable to keep abreast of the changing situation.

Introduction to the prerequisites of adulthood, marriage, procreation and child-rearing is being left to schools and other organised groups, even though doubts remain as to how effective they can be in replacing the informal preparation that the large extended family was able to provide through routine exposure and example.

Changing role of women

In most industrialised and industrialising societies, the participation of women in the labour force has increased significantly. The statistical fact of this may however belie the reality of the situation; for regardless of the degree of occupational involvement that has been achieved, the traditional concept of the women has not changed significantly in many settings. All too often she is still seen first as a mother and as someone whose responsibility is the care of the domestic situation. While involved in industry she has often remained peripheral to the labour market, has been paid less than men are for doing similar tasks, and has had fewer opportunities for advancement. Her occupational status has remained ill-defined and the different roles she has been called on to play have often tended to lack precision. Available evidence about the effects of such inconsistencies on mental health shows that all too little attention has hitherto been paid to the working and living conditions of women.

Similarly, although the small family is by now a well-established fact in the industrialised countries of Europe and North America, social pressures on the woman to plan her family have not been reduced. Indeed they may well have increased. Yet while there has been much progress in the development of contraceptive technology, the educational services and techniques for disseminating information about family planning have not been sufficiently developed.

In industrialised countries, where it is apparent that the planned child-bearing period for most women is being completed earlier than ever before, the need for protracted contraception has increased. There has been little development of counselling services specifically geared to this issue, or indeed to the needs of couples who essentially cease parenthood while still relatively young. Limiting family size has often meant that children attain adulthood and economic independence and leave home while their parents are themselves relatively young. This pattern of family life represents a significant change in many societies and is one whose ramifications for the parents have been little explored. Psychologists, for example, have pointed out that children constitute a stabilising force within the household; they not only symbolise the aspirations and expectations of parents, but act as agents of cohesion. And while women have been increasingly integrated into non-domestic activities, many of them continue to see children, in the traditional way, as a symbol of their accomplished maternal role. Their adaptation to a long period of childless life while yet physically active is a phenomenon for which society has not adequately prepared the family. In terms of the mental health of the mother and the couple, and in terms of conjugal life, these are further questions that need to be examined more thoroughly.

The couple

At the level of the couple too, it is evident that the movement away from the large extended family has brought with it changes in responsibilities. Students of the family in the United States, for example, have questioned the ability of the small family to accommodate itself, alone, to many of the economic and social stresses of life. Accommodation to familial problems, coping with demanding work hours, unemployment, chronic illness, alcoholism and death may be more difficult when the number of kin with whom these responsibilities can be shared is small. This is particularly the case in family situations where the couple are both involved in following their own work careers and must plan ahead somewhat independently of each other. Decisions about who should be the one to donate time to family responsibilities may take on a much more stressful character in such circumstances.

Old age

To older people, the changes that have taken place in the family have inevitably been of great consequence. Particularly in societies where the relationship between status, life-style and occupation is close, old age, symbolised increasingly by retirement, presents many psychological problems. Cut off from friendships and associations that have been formed and maintained throughout the working career, many individuals are left with few opportunities for occupying their time with satisfying activities. In situations characterised by small families where it has become increasingly accepted for children to move away from the household of origin when they start their own families (or even earlier), many of the ties that in traditional family systems ensured the welfare of old people are severe; old age often means isolation. The consequences of this type of isolation are far-reaching. In the United Kingdom and the USA, failure to retain an active role in society and be an active member of a family has been identified as one of the chief causes for the admission of old people to mental hospitals. It is also one of the reasons for their delayed recuperation, and for the explicit preference expressed by many for institutionalisation rather than rehabilitation and a return to their own homes, where they fear repeated isolation.

The inability of the small family to maintain the welfare of older relatives has also meant that problems that could have been dealt with effectively in the home environment are increasingly left to professional bodies. The consequent burden on health services, particularly in situations where specialised geriatric services do not exist or are not equipped to meet a large demand, has been and continues to be considerable.

The magnitude of this problem cannot be over-emphasised. Recent demographic projections for Europe alone indicate that by the year 2000 one in every 20 Europeans will be aged 75 years or over, a 100 per cent increase over the comparable situation in 1950. Similar growth in the populations of old people in other parts of the world can be anticipated as longevity increases.

The health-related needs of such groups cannot and should not be seen as solvable simply by extending the existing geriatric services. Much more important will be the close examination of older people's needs in modern society and the development of appropriate counselling, educational re-training and recreational services, all orientated towards the continued functional integration of the aged in society.

What do these issues mean for health and health planning ? That the family is changing is clear. That the implications for the individual, the family and the community are significant is also apparent Many of the changes may be inevitable, and it would be both inappropriate and purposeless to make any moral evaluation of the changes in family structure. It is, however, imperative that these changes be carefully taken into account by those who plan health and social services, so that the ramifications of the transition that is taking place be anticipated in terms of services designed to meet the various needs of the family and its members. In developing countries the rapidity with which these changes are occurring makes it imperative that attention be focused on their problems. In developed countries, meanwhile, it would be naïve to suppose that the situation has been adequately met, for indeed it is in these countries, where the change has been relatively gradual, that too much has been taken for granted and too little adaptation in terms of services has been attempted

FPAI AND INTERNATIONAL WOMEN'S YEAR

In response to a circular from Smt Avabai B. Wadia, President, FPAI, several FPAI Branches organised special programmes during International Women's Year, 1975, to emphasise the link between family planning and the status of women. Besides these programmes, the Branches also took an active part in the events organised by the governmental IWY Committees in their respective states. The following account of FPAI's IWY activities is based on reports received from Branches so far.

At Headquarters

To commemorate International Women's Year, new ground was covered by the Headquarters' Education Officers in Bombay when seasoned social workers representing various fields of activity, were invited to a discussion session in early March, as a part of their community work. The effectiveness of family planning programmes was discussed and solutions were suggested for strengthening FPAI's field work in the light of the views expressed by the social workers

Working women speak out

An overwhelming response from 106 women from ten Labour Welfare Centres under the Maharashtra Labour Welfare Board and seven Centres under the jurisdiction of the Bombay Municipal Corporation, was received by Headquarters, for its essay and elocution competitions organised on 10th and 11th July, 1975.

The topic, "The Status of Women in India and the Role of Family Planning in Raising this Status", was one which was very close to the hearts of these simple, unglamourous women – young and old, and ranging from the illiterate to the graduate. They therefore spoke with conviction and with fervour about the utility of family planning in improving women's status. The essays and speeches, mostly in the Marathi language, clearly identified the problems common to many Indian women and the action required to be taken to make a genuine contribution to IWY. [A full report of these competitions appears in FPAI's bulletin, *Planned Parenthood,* August 1975.]

Rural women's meet

"Rural Women and Social Development" was the theme of a Seminar organised by FPAI Headquarters from 7th to 9th June, 1975, in Dharwar, as another IWY event.

The seminar was inagurated by Smt. Shanta Devi Malawad, a well-known Kannada writer and social worker. The 145 participants included representatives of 52 Mahila Mandals in the rural areas of the eight districts covered under FPAI's Karnataka Project, field workers attached to the rural projects of FPAI Branches in these districts, and state, district, and taluka level officials of the health, family planning, adult education, community development, field publicity, agriculture and other departments of the government of Karnataka.

The seminar discussed various aspects of family life and its relation to social development in rural areas and especially those aspects which affect their daily lives, and made several constructive suggestions for enriching rural life, particularly for women and children. The seminar also formulated a very useful plan of action, with an emphasis on self-reliance, for Mahila Mandals, for effecting a change in the quality of rural life.

"What Women Say About Family Planning"

"Society expects the woman to bear children—male at that; give comfort to the man by subserving herself to his every wish; and to attend to every household duty no matter how overburdened she may be. Her duties are stressed, her total abasement is lauded, but who cares about the individual that is lodged within the woman's body? Does she not have dreams and desires like anyone else? Education and family planning are the tools which can aid a woman to raise her status"

This is what a Bombay housewife from a lower middle class family vehemently declares in a little booklet brought out by FPAI Headquarters to commemorate International Women's Year.

The booklet, entitled *"What Women Say About Family Planning"*, consists of short statements by leading women in different professions as well as the average Indian woman in the field, the housewife, etc., about the benefits of family planning, particularly in helping to improve the status of women, as also in promoting family welfare and national progress.

A well-known research scientist from Bombay, writes: *"For a woman who has to contribute to the family income or who wants to achieve a goal in her career, be it in the scientific, social or political field, the ability to plan her pregnancy has come as manna from heaven. Likewise, the knowledge about fertility control has brought hope and joy to many a barren marriage."*

"Family planning is good for the individual, for the society, for the nation and for the country. It is a wrong notion that family planning has harmful effects on the individuals who practise it," states a celebrated dancer and film star of the Indian screen.

Emphasising the importance of family planning for improving the lot of women, two noted social workers from Hyderabad and New Delhi, express their viewpoints for tackling the population problem thus:

"It is important to integrate family planning with agriculture and self-employment programmes within the villages in a big way by involving voluntary agencies already working in the field.".. , feels one of them, while the other is convinced that, *"The economic perspective is . . . . . the most determining factor in altering the status of women and reducing the birth rate . . . . . . Making women equal partners in the work force will not be a simple proposition, but even if partially successful, with sufficient support of ancillary services for working mothers and a proper integration of family planning and family welfare, there will be a marked difference both in demographic figures as well as in national progress."*

Single copies of the booklet may be obtained by writing to the Family Planning Association of India, 1, Jeevan Udyog, Dadabhai Naoroji Road, Bombay 400 001.

At the Branches

Seminars, meetings on family planning and women's status

The *FPAI Andhra Pradesh Branch* marked IWY at a function attended by representatives of 24 other voluntary organisations of the twin cities, on 30th July, 1975. Inaugurating the function, Shri J Vengal Rao, Chief Minister of Andhra Pradesh, said that the State Government was preparing to undertake several measures to improve the economic and social status of women. Shri M. V. Krishna Rao, Minister for Education, who presided over the function, stressed the need for spreading literacy, especially among women. He informed the gathering that four women's Degree Colleges and four Junior Colleges had started functioning in the State during the academic year. There was also a proposal to open a residential college for girls and to increase the number of women's hostels. Speeches were made by Dr. (Smt) M. F. Jussawala, President, Federation of University Women, Hyderabad Branch, and Shri Gopal Rao Ekbote, Ex. Chief Justice of the Andhra Pradesh High Court.

The *Bangalore Branch* organised a one-day Seminar on "Population Problems" on 25th January 1975 at the Institute of Home Science in Bangalore. The Seminar, which was attended by about 55 participants including the staff and students of the Institute consisted of papers on the dimensions of India's population problem and on improving the status of women. These were followed by lively group discussions which resulted in several practical suggestions for increasing population awareness among rural and urban dwellers. A similar meeting of women was arranged by the Seshadripuram Urban Family Welfare Planning Centre run by the Branch on 21st February 1975.

Another special event arranged by the Branch was a symposium on "Men have a message for women", for the members of the University Women's Association and other voluntary organisations in the city, on 30th December, 1975. The symposium was conducted under the presidentship of Vidyalankara Prof. S. K. Ramachandra Rao, Post-Graduate Department of Psychology, Social Work and Indology of the Bangalore University. The distinguished speakers highlighted the theme "equality, peace and progress" in relation to IWY on the occasion.

On 16th October 1975, the *Bellary Branch* held a Seminar in observance of IWY. The Seminar was inaugurated by Dr. (Smt) Doraiswamy, an eminent medical practitioner, and attended by a large number of local doctors, dignitaries, the members of a Ladies' Club, Branch members and about 350 students.

The one-day Seminar which discussed several issues related to women's uplift including the age at marriage and its relation to fertility, the role of educated women in raising the status of their less educated sisters etc., made several useful recommendations.

Ninety women from 37 villages in Bellary taluka, besides other local dignitaries and Branch members, participated in another one-day Conference on "Rural Women and Social Development", organised by the Branch on 24th November, 1975.

During 1976, the *Bijapur Branch* directed its efforts to the women in the village Mahila Mandals by arranging orientation camps on population education and family planning, adult literacy classes, and family planning song sessions and exhibitions. Talks on population awareness were also arranged at girl's schools and for women of the Khadi Gramodyog Kendra. These programmes covered over 700 women in about 15 villages.

The *Gomia Branch* formed a IWY Committee, headed by Smt. Madhu Arora, Vice-President of the Branch, to plan and carry out its IWY programmes. The Year was officially opened with a meeting which discussed the role of women in social development, the status of tribal women, the relationship between family planning and quality of life, etc. The first event organised by the Branch was a three-day publicity drive including group meetings, film shows, exhibitions, etc. both in the rural and coal-mining sectors.

"Working Class Women and their Families" served as the topic for a Conference arranged by the FPAI *Kanpur Branch,* which generated a very lively discussion on the problems of working women and on the ways of solving them. The one-day Conference was inaugurated by Justice K. N. Srivastava, Retired High Court Judge, on 1st December, 1975. Shri Har Swaroop Sharma, Labour Commissioner of Uttar Pradesh, was the chief guest.

The FPAI *Lucknow Branch* ushered in the Year with a women's campaign held on 19th and 20th February 1975 at the U. P. Government Labour Welfare Centre. It began with a huge rally of over 1500 women which was followed by talks on the status of women, nutrition, family planning, etc., and the screening of educational and family planning films, including a film, "Indian Women."

The Branch also collaborated in the organisation of a Seminar with the U. P. United Nations Association. At the Seminar which was inaugurated by Shri Chenna Reddy, Smt. Hem Sanwal, President of the Branch, and a member of the State IWY Executive Committee, read a paper on the importance of family planning in a woman's life, which was much appreciated. The Branch also held a successful two-day Seminar highlighting the utility of family planning in improving women's lot.

A series of exhibitions focussing on the family planning and population education themes were also organised by the Branch in various educational institutions and hospitals to propagate the family planning message and the role of women in this sphere.

The *Manipal Branch* reached over 1500 women in the villages of Katpadi, Hejmadi Kodi and Udyaver through talks on the social problems of women and children with special emphasis on family planning, given by female students of the Kasturba Medical College. They were interspersed with lively songs on the family planning theme, and were thoroughly enjoyed by the women. A half-day Seminar was organised by the FPAI Manipur Branch on 29th December, 1975, to discuss the status and role of the rural woman and its relation to family planning.

Women's Day in New Delhi

Smt. Krishna Puri, Vice-President, FPAI, and President of its *New Delhi Branch,* represented the Association at a mass rally which marked the inauguration of International Women's Year by the Prime Minister, Smt. Indira Gandhi. The rally was held on 16th February 1975 at New Delhi. After addressing the rally Smt. Gandhi was introduced to the representatives of the 40 member organisations of the non-official IWY Committee of which FPAI is a member organisation.

PM addresses another rally

The Prime Minister urged women to propagate family planning and to launch cleanliness drives in their own interest. She was addressing another huge rally organised by the Indian and the Delhi IWY Committees on 15th March 1975, at Purdah Bagh, New Delhi.

She called for special efforts to be made in 1975 to educate women about their rights. Men, she said, should work along with women for improving the status of women. She recalled that women had responded admirably to Gandhiji's call to join the freedom struggle, and appealed to them to fight rising prices, adulteration, and other social evils, a task which was no less difficult.

The Prime Minister then went round an exhibition arranged on the occasion by various voluntary organisations and women from diplomatic missions. She also visited the attractive and informative stall put up by the FPAI New Delhi Branch on family planning and maternal and child health care. The foreign stalls illustrated the status of women in twelve different countries.

The meeting which was truly a women's affair, was attended by a large number of village women who came with their children, women social workers and politicians, representatives of voluntary organisations, etc. The contingent of 50 police women who were on duty included women inspectors, sub-inspectors, etc.

Teenagers examine women's status

The Population Education Unit of the Branch took the initiative to involve teenagers in active discussions on women's status vis-a-vis India's total development by organising "A Two-day Teenagers'Meet" on 9th and 10th September 1975, on the theme "India's total development is not possible without securing a better status for women." The Ramjas Higher Secondary School No. IV. hosted the Meet.

Inaugurating the Meet, Smt. Yasho Rajyalakshmi Karan Singh, a patron of FPAI, called on the young boys and girls to view population issues in the right perspective so that when they attained parenthood, they would adopt a responsible attitude. Among the experts speakers were Smt. Serla Grewal, Joint Secretary and Commissioner, Family Planning Government of India, and Shri P. N.

Luthra, Secretary Department of Social Welfare, Ministry of Education and Social Welfare.

The youngsters participated most enthusiastically—all the sessions were fully attended and the plenary sessions sometimes drew as many as 500 boys and girls. They listened attentively to the specialists who spoke to them and later spiritedly discussed the topics which included the influence of current population trends on women's lives, the status of Indian women and India's total development, the role of youth in bettering women's condition, and measures for doing away with legal and social impediments facing women and for utilizing their potentialities fully.

Recognising the vital relationship between the country's total development and women's status, the participants made several recommendations and decisions towards the achievement of a better status for our women. As a first step they resolved to form pressure groups to create public opinion in favour of freeing woman from the age-old shackles which confined her within the four walls of her house, and provide her with opportunities to develop herself as well as to contribute to the development of her country.

International Women's Year was launched by the *FPAI Patna Branch* with a half-day meeting attended by about 100 persons, mainly women representing different local institutions and rural Mahila Mandals.

The meeting was addressed by several local dignitaries who spoke eloquently on women's rights, their important roles in social and public life. marriage and family life education, etc. One of the speakers, representing a local Mahila Mandal, gave a very interesting and inspiring talk on the status of rural women, their problems, and of the importance of education and especially of family planning education, in enriching their lives.

WOMEN IN THE HEALTH SECTOR— PAST & PRESENT

DR. (SMT.) INDIRA KAPOOR
Officer-in-charge, Family Planning Training and Research Centre
(Govt. of India), Bombay

"Womanhood is powerful", is perhaps a phrase which sums up the silent and pivotal role that women have played in the domain of health services. As the challenges in the field have increased many more women have taken up the cause of health and new hands have joined the ranks for eradicating the scourge of disease. The modern woman, who aspires to contribute her mite to the health sector, does not have to face the same struggles that some of her pioneering sisters had to in the past.

Medical aid for women was almost negligible even as late as the nineteenth century. This was mainly due to the *purdah* system which was common not only among Muslims but also among a number of Hindu families especially in the north. Even those who did not observe *purdah* were averse to being examined by male doctors. This conservative attitude resulted in almost half the population actually going without medical aid. In 1920, the maternal mortality rate was 20 per thousand births and much higher before that. Since then, it has been brought down and today it stands at less than two per thousand births. Similar trends were observed in the case of infant mortality, pre-school child mortality and the morbidity of women and children in general. Women in their various roles in the health sector have largely contributed to the trend towards this positive health picture.

The Pioneers

Much before Dr. Browns started the first medical school for women in 1905 in Ludhiana and, before the Lady Hardinge Medical College started functioning in Delhi in 1916, at the tender age of seventeen, Anandibai left the shores of India for America (in 1882) to receive medical education and to become the first Indian lady doctor. She was the daughter of a wealthy landlord who married her off at the age of nine to Gopal Vinayak Joshi, a clerk in the postal department. Gopalrao wanted her to go to school inspite of the idea being unacceptable to the orthodox society of his times; and with the help of Christian missionaries succeeded in getting her to formally complete her school education.

In 1878, when their only child died soon after birth, deeply shocked, she felt that it could have survived with proper medical treatment. This added to her realization of the urgent need for women doctors in India. She expressed her desire to go to America to study medicine and her husband agreed. He wrote a letter to the editor of an American magazine, for assitance. Although the editor did not promise any help, he published the letter in his magazine. Mrs. B. F. Carpenter, an American lady who wished to help India, read it and with her help and that of the missionaries, Anandibai sailed to America, and secured her M. D. degree in Medicine from the Women's Medical College in Philadelphia. However, failing health forced her return to India in November 1886, after a journey of six weeks. She was suffering from pulmonay tuberculosis. On her return she was appointed on a high medical post in Kolhapur State but unfortunately, died in February 1887. Anandibai had struggled hard to fulfil her desire to serve humanity but the pecuniary conditions leading to lack of food and clothing and overwork proved fatal to her.

The missionaries played a pivotal role in the development of health services. By 1890, they had already established two medical schools. One of these, at Ludhiana, trained Indian women as sub-assistant surgeons and absorbed them in mission hospitals. Parsee women were the first to attend a complete medical course at the universities of Calcutta, Bombay and Madras for the M.B.B.S. degree. The Madras Medical College opened its doors to women in 1875 and was followed in 1833 by the Bombay College.

Dr. Motibai Kapadia joined the Grant Medical College, Bombay, in 1884 and passed the L.R.C.P. examination in 1887. In those days, even in a city like Bombay, women's education was frowned upon. Despite all opposition from relatives and friends, Motibai's father allowed her to study medicine with other male students. She was one of the first few women to join a college, which had previously admitted only male students. The other lady students belonging to her group were from the Parsee and European communities; at that time Hindu women were not allowed to go in for higher education. Dr. Motibai was one among the few women and the first in the Bombay Presidency to obtain the covered degree of F.R.C.S. in 1891.

Back in India, she took charge of the Victoria Jubilee Hospital for women and children. The hospital, which initially had one nurse and six beds for maternity use, expanded to 100 beds with 1000 deliveries per year at the time of her death. Motibai worked at the hospital for forty years in the spheres of medicine as well as of social welfare. She trained Hindu widows to become nurses in her hospital, personally translating English midwifery books into Gujarati. She also won over the local midwives and *dais* and trained them for carrying out deliveries more hygienically. Recognising her services to humanity, the British Government awarded her the Kaiser-E-Hind Silver Medal in 1912.

Another woman who rebelled against Indian traditionalism to study medicine was Dr. Rukhmabai. She was bitterly criticized for refusing to live with her husband who filed a suit against her, leading to a six-month imprisonment term. A compromise was finally reached when she paid a large sum of money to him and got rid of her ties, though in accordance with Hindu Law, it was decreed that Rukhmabai could never marry again. She left India in 1889 and obtained her L.R.C.P. and M R.C.P. degrees from London and her M.D. from Brussels, as the doors of London University were closed to women candidates at that time. On her return to India she worked tirelessly for the women and children of Surat and its outlying remote villages for 22 years.

The medical inspector of the Port of Bombay during the city's first plague epidemic in 1897, was also a woman. Dr. Emmeline De Cunha D'Costa graduated in 1902 as a Bachelor of Hygiene from the University of Durham with honours, winning the Luke Armstrong prize in Bacteriology.

In The Early Twentieth Century

By the time the third and fourth generations of medical women entered the profession, they had become a powerful social force in Indian society. Mathula L. Reddi, who completed her professional course with distinction in 1907, specialising in gynaecology and child welfare, became the first female surgeon in the Government Hospital, Madras. Mary Lukose was the first woman to be appointed as acting head of the Medical Department of Travancore State. She introduced trained hospital nurses into private homes, induced women to go to the hospital for delivery, tackled the problem of training midwives, organised a separate ward for children, and organised child welfare schemes in the slums. Both Dr. Reddi and Dr. Lukose also led full personal lives as wives and mothers.

One can thus see that all these women fought against the many prejudices and social customs prevalent in their orthodox societies with undaunted courage to give direction to a movement which at that time was in an embryonic stage. This process often consumed all their energy, both physical and mental. They had to pay the price in terms of loss of life or family life and/or very frequently, social and religious ostracism. And yet, these outstanding women succeeded in sowing the seed for the twentieth century women leaders to forge ahead and fulfil their vital roles in the health sector. Today, practically all the doors are open to women and women are found holding a variety of posts and positions in all walks of life.

Women's Role In Nursing

In India, though the history of nursing goes back to many years, modern nursing began only with military nursing, when the influence of Florence Nightingale, the "Lady with the Lamp" was felt.

For many years, only Government and Municipal hospitals offered training in nursing to Anglo-Indian and European girls. It was the mission hospitals again that pioneered the training of Indian nurses. Even today, the number of Christian nurses in India is far greater than those from other communities.

In 1907, Smt. Ranade made a start in this direction by founding the Seva Sadan Society in Poona. At first, some thirtyfive Hindu widows (ranging from babies to old women) lived in Mrs. Ranade's house, and received a thorough education. Many among them were trained professionally as nurses, by qualified nursing sisters in the Sassoon Hospital.

The Cama and Albless Hospitals in Bombay were also among the first few hospitals to persuade young widows to take some training in nursing. Even as late as in 1929 when Dr. J. Jhirad took over as the medical officer at this hospital, all the ward sisters were widows. Dr. Jhirad's work in the medical field has been outstanding. Miss Lavinia Mewa and Miss Maula Bukhsh were the first two nurses trained in England through the Lady Reading Funds in 1923. Smt. S. Phatak was the first Indian nurse to win a League of Red Cross Scholarship in 1925.

The health profession and specially nursing is a profession which is more suited for women as it essentially requires a combination of hard work, the gentle touch, the maternal instinct, kindness and the capacity to understand another's pain. But the nursing profession is loosing its appeal and now fewer girls come forward to take it up as a career. Nursing is actually a highly skilled job, calling for prolonged technical training and yet, is somehow, looked upon as a mindless profession. Added to it, are the long working hours, job insecurity in the interior, remote villages, lack of proper status and very low pay scales.

One need not, of course, emphasize the sterling work of Mother

Teresa and her tremendous contribution to the health sector. She is the indomitable champion of the poor, working silently among the dying persons and the destitutes of Calcutta. She has the remarkable quality of attracting girls from all parts of the country to take up her dedicated work. These girls include fully qualified nurses and doctors, proving that there is no dearth of dedicated young people in India, but what is required and was provided by the kind-hearted Mother, was security of place and an example of the dedication and love for work needed in this profession.

All these examples reflect the powerful role of these women who instinctively and voluntarily dedicated themselves to health services in the face of divers and difficult problems.

Woman as a Health Worker Today

When one talks of the role of women in our country's health sector, the ones who shine vividly are the female health workers, viz. the public health nurse, the auxiliary nurse midwife, the lady health visitor, the Gram-Sevika and the village *dai* at the primary health centres and sub-centres in the remote villages of India. An obvious fact noticed on a visit to an Indian village is that of all the varied services, the one which has reached most people is that of the female health worker.

Here is a case history of a typical present-day auxiliary nurse midwife.

Annama Gauri works at a Sub-centre, about five miles away from the Primary Health Centre. She hails from Kerala, where her father has a small shop. Her mother is also a nurse. She is one of the highly motivated persons in her profession. Her attitude towards preventive and curative medicine, her skill in providing health and family planning care and her acceptance of health education as a part of her job makes a great impact on the integrated approach of the health services of the Sub-centre.

She lives with a trained dai (midwife) in a small two-room tenement. The front room also serves as the clinic during the day. She has been at this Centre for the last seven years now. Of her earlier experience Annama says, "I was young and scared of entering the first few houses. At times I was not sure of my advice but a decision had to be made." In her earlier days she did feel lonely and insecure. Now, with the exellent rapport she has established with the local people, Annama makes her home visits with confidence. Her daily routine begins at 7.30 a.m. She travels mostly on foot, visiting fifteen to twenty homes daily for maternal health, child health and family planning services, conducting weekly clinics, attending domiciliary deliveries when called by the villagers (at times at night), helping in school health programmes, giving health talks in the primary school once a fortnight, attending the monthly staff meetings at the Primary Health Centre with other Sub-centre staff maintaining a daily diary, and preparing monthly reports. During the special camps for family planning organised by her Centre, she visits eligible couples to fulfil her targets for family planning.

One cannot but admire the courage and patience with which these young girls are facing the realities of life and playing unique and important roles, which have become more vital since family planning was taken up on a national scale in 1962, in the health services of the country. They not only carry the message of the small family to the village women, but have achieved and done much more for the uplift of the average Indian woman in general by helping her to think and form an opinion about the welfare of her family, thereby raising her status to that of a decision-maker. With the integration of family planning with health programmes, she is also made health conscious and time conscious, by being taught to look after her children's health by way of immunizations and promotive and preventive tonics. Besides giving health and family planning advice these village health workers are thus simultaneously helping the average woman to come out of her shell and to become more self-reliant.

Annama is able to achieve the maximum out of what she puts into her work, because of the involvement and co-operation of the Panchayat and the local people. All the peripheral workers are not equally fortunate, the problems of the health workers in rural areas are many. There are many who take up the profession because of poverty, and not out of a liking for the job. Naturally their involvement in the job is not complete. Nevertheless, these women, spread all over India, are shouldering the responsibilities of community health, maternal and child health, and family planning activities.

Women and Social Work

India has a long tradition of social work and social service. A number of pioneers in this field have contributed a lot towards the health sector. Early work in this sphere was almost exclusively done for the social uplift of women, but later with the opening of pre-natal and post-natal clinics and social education centres more emphasis was placed on the health aspect.

The family planning movement in India also began as a social welfare movement led by women to protect the health of the mother and child. Shrimati Dhanvanti Ram Rau has done pioneering work in this field; she became the first President of a national voluntary organisation devoted to family planning work. Her mission is being continued by Smt. Avabai B. Wadia in an untiring manner.

A woman Minister, Rajkumari Amrit Kaur, held the health portfolio at the Centre for a number of years. She initiated schemes for the expansion of maternity and child welfare, training of nurses, control of malaria, filaria, venereal disease, leprosy, tuberculosis, cancer, etc., and started several schemes for the prevention of disease and improvement of national health. Her distinguished services in the World Health Organisation and other international assemblies and associations brought financial help to India in the form of medical and other scientific equipment. The second woman Health Minister of the Indian Union was Dr. Sushila Nayyar who also rendered useful service to women. Women are also employed as medical and nursing officers in the Armed Forces and during the war a number of women doctors and nurses worked as Officers in the Indian Army Medical Services.

Smt. Leela Moolgaonkar took up the cause of blood banking and contributed a great deal by emphasising and successfully introducing blood donations on a voluntary basis. Taking inspiration from these dedicated people in the health and family planning spheres, more and more gifted women are involving themselves in the cause of voluntary medical and social work.

Marriage and Work

Today, though women are making useful contributions at all levels of the hierarchy, from the top-ranking doctors to the village level worker, a strong criticism is frequently put forth that all women who go in for these courses often do not practice later or abandon their studies half-way through to get married. A study carried out by the YWCA of India found that 11.7% of qualified women doctors were neither employed nor engaged in private practice. A similar proportion (12.5%) of trained/graduate nurses were also found to be unutilised. When married and single women were further analysed separately, it was found that among the married group, 61.1% of medical graduates and 77.0% of medical diploma holders were unemployed.

It would be fair to assume that these women could not combine the multiple roles of the full-time professional worker, the wife, the mother, and in the Indian context, of a dutiful daughter-in-law in the house. Many have achieved this quite successfully, but it is bound to put great physical and psychological strain on an individual specially when it comes to specialization for higher jobs.

These married medical women can go in for part-time jobs, get employment in local or central health schemes; work in special part-time clinics, do voluntary social work in slum areas or nearby villages; or even run a private clinic.

The liberal humanitarianism of the West provided a guiding light and revealed the hitherto dormant qualities of Indian womanhood. Indian woman realised that her mission in life does not end with working behind the curtain for the goals of a man and for his development, by becoming a good wife and wise mother. She could also leave her shell and in the field of health could face millions of odds, and yet shine forth by adhering to her values for love and sacrifice. In fact, health is a field intended for a woman by her very nature, since right from birth, the Indian woman learns to think of someone beyond herself and still within herself. Women, who have contributed to the health sector, have proved beyond doubt that there is every reason to believe that they can attain any position to which they are entitled according to the modern concept of liberty, not only in the national but also in the international health sphere.

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THE WORLD IWY CONFERENCE

The World Conference of International Women's Year, the focal point of a series of activities during International Women's Year 1975, directing attention on the status of women in both developing and developed countries, ended in Mexico city on 2nd July 1975.

The Conference, which was inaugurated by Mr. Kurt Waldheim, UN Secretary-General, on 19th June, was attended by over 5,000 delegates—representatives of 133 countries, as well as participants from 7 inter-governmental bodies, 21 UN organs and specialised agencies, 8 liberation movements and 14 non-governmental organisations. Women delegates outnumbered men by about five to one. The leaders of delegation included many women cabinet officials, members of legislative bodies, judges and one cosmonaut of the Soviet Union.

India sent a nine-member delegation led by Smt. Prabha Rau, Minister of Education, Maharashtra State. A message to the Conference from Prime Minister Indira Gandhi, was read by Smt. Parvati Krishnan (see page 3). Smt. Avabai B. Wadia, President, Family Planning Association of India attended it as a member of the IPPF delegation to the Conference. She also participated in and chaired one of the sessions of the Non-Governmental Organisations' Tribune on "Population and Planned Parenthood", which was organised by the IPPF. This session examined two case studies concerning the special problems of Latin American women caused by migration, and the integration of family planning education and services in an agricultural setting.

The Conference adopted a World Plan of Action for the advancement of women, a Declaration of Mexico on equality of women and 34 resolutions on the status of women and other issues.

10-year world plan supports family planning

The World Plan of Action, the major achievement of the Conference, seeks to: "*. . . stimulate national and international action to solve the problems of underdevelopment and of the socio-economic structures which place women in an inferior position . . .*". It states that it is the right of individuals and couples "*freely and responsibly to determine the number and spacing of their children and to have the information and the means to do so*". This right, says the Plan, is "*basic to the attainment of any real equality between the sexes, and without its achievement. Women are disadvantaged in their attempt to benefit from other reforms.*" This paragraph was added to the Introduction of the Plan as one of the amendments suggested by IPPF and sponsored by a number of delegations.

A second amendment also suggested by IPPF and incorporated in Chapter I of the Plan which laid down minimum achievements to be attained by the end of the first five-year period (1975-80), "increased provision for comprehensive measures for health education and services, sanitation, nutrition, family education, 'family planning and other welfare services.

Targets

The Plan's targets for governments to achieve within the next decade, 1975-85, which the Conference recommended be declared a Decade for Women and Development, call for improvements in women's literacy, vocational training and other forms of education, employment opportunities, participation in policy-making and the political process, health and other services, the exercise of civil rights, modern rural technology and other work-saving devices, as a minimum.

Declaration of Mexico

The Declaration of Mexico, which was adopted by a vote of 89 in favour of, 3 against with 18 abstentions, sets forth 30 principles stating the need for measures to advance women's rights and linking those goals with economic and political objectives. Among its principles the right of *"every couple and every individual to decide whether or not to have children and their number and spacing, and to the information, education and means to do so."* Respect for human dignity says the Declaration, *"encompasses the right of every women to decide for herself whether or not to contract matrimony"*.

Resolutions

Among the 34 resolutions adopted by the Conference were, calls for improved protection of the health of women and of children, for the special protection of the family (including the right to family planning information and methods), and for the prevention of the exploitation of women and girls in forced prostitution. Other resolutions dealt with the prevention of discrimination in employment, equal opportunities in education and training, integration of women in the development process, etc.

The two-week long deliberations therefore resulted in a number of important recommendations aimed at improving the lot of women all over the world. However, as Ms. Helvi Sipila, Secretary-General the Conference, pointed out, the implementation of these recommendations will depend on the preparation of regional plans to follow them up and still more, on the willingness of individual governments to implement them.

THE FAMILY PLANNING ASSOCIATION OF INDIA

(Registered Under the Societies' Registration Act, 1860)

AIMS AND OBJECTS

1. To disseminate knowledge and education about, and to promote the adoption of, the practice of family planning for the advancement of basic human rights, family and community welfare, the achievement of a balance between the population and its resources and productivity, and the attainment of a higher standard and quality of life.
2. To assist wherever possible in the national programme of family planning by undertaking to carry out various activities of a complementary, supplementary or innovative nature
3. To study and formulate policies and programmes regarding the provision of measures for family planning, population control and allied subjects, and place its considered views and advice before Government and other agencies whenever appropriate
4. To undertake or promote studies and activities in regard to services, training, education and research programmes covering the demographic, sociological, economic, medical and other relevant aspects of human fertility and its regulation, including methods of contraception, sterility, and sub-fertility, sex and family life education, marriage counselling, population education and human ecology.
5. To collect information and statistics and to organise conferences, seminars, training courses and other meetings, whether local, national or international, in the furtherance of the Aims and Objects of the Association.
6. To establish Branches and other units for the promotion of the Aims and Objects herein
7. To foster and develop contacts with other organisations engaged in similar types of work in India and abroad

Clauses 8 to 18 deal with administrative and financial subjects

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This Journal is devoted to discussing views and providing information on all aspects of family planning including social, cultural, and demographic factors, medical problems and methods of fertility control, and questions pertaining to education for marriage and family living. It is endeavouring to accomplish this in a non-technical manner so that the lay public as well as social workers may become more closely acquainted with this area of welfare.

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THE IMPACT OF HEALTH EDUCATION ON ACCEPTANCE OF FAMILY PLANNING METHODS FOR SPACING BY LOWER SOCIO-ECONOMIC PRIMIPAROUS URBAN WOMEN

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The population of Gujarat State has been growing at the rate of 29.2 per thousand (Census of India, 1971), a figure higher than the Indian average of 25 per thousand population. Gujarat's birth rate has declined only by 4 points from 45.5 to 41.5 during the decade beginning 1961. The failure to effect a greater reduction in the birth rate could be due to the fact that much attention was not paid to women in the lower parity group i.e. para one to three, who contribute to 50 per cent of the births in Gujarat, and most efforts were focussed on sterilisation camps for couples with four or more children.

According to demographic projections, the birth rate would fall to 25 per thousand population if the number of children per couple is brought down to three, 17 per thousand if each couple has two children and further to 9 if each has only one child.[2] A significant drop in the birth rate would be evident if all the eligible couples with one to three children were to be covered and motivated to adopt family planning methods for the purpose of spacing births. This study aims at investigating the effect of education on primipara of the lower socio-economic class, which forms the bulk of Gujarat's population, on their acceptance of temporary methods of family planning, and its impact on fertility.

Method

The sample consisted of 93 primipara from the maternity ward of the Old Civil Hospital, Surat. Of these, 50 were included in the experimental group and the remaining served as controls. The two groups were matched with respect to factors like age, religion, education, occupation, family life, attitude to family planning, etc. Any chance differences occurring between them were tested and found to be statistically insignificant. (See Appendix)

The project was initiated in November 1970, and the final data were collected in April-May, 1973. The women belonging to the experimental group received health education in the maternity ward, on methods like the condom, diaphragm, IUD and the oral pill, with the help of models and pictures. Each woman in this group received three follow-up visits post-delivery. The first, three months after the delivery, the second six months later, and the third, a year after the delivery. At the last follow-up visit, information about the child's immunisational status, the use of contraceptives, weaning and pregnancy status was collected from this group of women. The women in the control group were interviewed only once for primary information.

Results

As many as 66% of the women who had been given health and family planning education were found to be practising contraception regularly one year after delivery. On the other hand, only 4.6% of those who had not received such information practised some family planning method at the end of one year post-delivery. The difference in acceptance of contraception between the two groups was statistically significant. ($x^2 = 37.8734$, $P < 0.001$, d.f. = 3)

TABLE 1

Contraceptive status of respondents

Contraceptive status	Experimental group	Control group
Practising regularly	33 (66.0)	2 (4.6)
Practising irregularly	5 (10.0)	5 (6.9)
Not practising	12 (24.0)	34 (79.0)
Husband away	——	4 (9.3)
Total	50 (100)	43 (9.3)

The figures in parentheses represent percentages

The mean period of exposure in order to conceive (in months) per woman in the experimental group was 15.32 ± 5.17, while that of the control group was 8.78 ± 5.58. The difference between the two groups was statistically significant. ($x^2 = 10.25$, d.f. = 1; $p<0.005$) The mean exposure period (in months) per pregnancy was 47.87 ± 54.36 for the experimental and 13.00 ± 18.72 for the control group,

TABLE 2

Period of exposure to conception

Months of exposure	No. of women in experimental group	No of women in control group
0-3	-	9
4-6	4	8
7-9	3	10
10-12	7	5
13-15	10	4
16-18	12	5
19-21	7	1
22-24	7	1
Total	50	43

Note : The period of exposure is the period of two months after delivery upto the first missed period, provided the women is living with her husband.

the difference being statistically significant at a 1% level

Thus the women who had received family planning advice post-delivery required a significantly greater number of months of exposure to become pregnant Further, the conception rate was also much lower in this group of women, being almost half (32%) that of the control group (67%). The pregnancy rate per thousand per year worked out to 5.01 for the experimental group, a rate much lower than that observed for the control group (21.47).

TABLE 3

Relation between conception and breast-feeding

Months of breast-feeding	Experimental Group		Control Group	
	Total	Number pregnant	Total	Number pregnant
Child expired	1	1	1	1
-6	2	1	10	10
7-12	22	11	16	12
13-18	23	3	16	6
19-24	2	—	—	—
Total	50	16	43	29

Table 3 reveals that all the ten women in the control group who had been breast-feeding their children six months, were pregnant while only one of the two women in the corresponding experimental group was pregnant. The rate of pregnancy decreased progressively with the number of months of nursing of the babies and was consistently lower in the experimental group as compared to the control group.

The differences in the conception rates of the two groups for the different periods of lactation were tested and found to be statistically significant at the 5% and 2% levels in the experimental and control groups respectively ($x^2 = 10.44$, d.f. $= 4$; $p<0.05$ and $x^2 = 12.47$, d.f. $= 3$; $p<0.02$ respectively).

The experimental group of women had, besides family planning information, also received health education including immunisation of their children. It was encouraging to observe that as many as 62% of these primiparous mothers had remembered and used this knowledge and had given complete protection to their children. In the control group, only 16.3% of the mothers had completed the immunisation course for their children. The difference between these groups was also statistically significant ($x^2 = 18 15$, d.f. $= 1$; $p<0.001$)

Discussion

A significant difference was observed between the two groups of primiparous women, of which one group had received health and family planning information in the immediate post-delivery period, with respect to acceptance of contraceptives, period of exposure for a pregnancy to occur, rate of pregnancy, and acceptance of the child's immunisation programme. The rate of pregnancy was much lower (32%) in the experimental than in the control (67%) group. This difference may be attributed to the education and motivation given to the experimental group of women.

Another reason for this positive effect on contraceptive and fertility behaviour between the two groups, could stem from the difference in their attendance to well-baby clinics where the children are vaccinated. The rate of acceptance of the immunisation programme was also significantly higher for the experimental group. The women's attendance at these well-baby clinics provides an opportunity to the family planning personnel for maintaining a continuing rapport with the mother and child. We believe that contraceptive acceptance was higher among the experimental group of women because they were approached in the immediate post-delivery period at which time they are more predisposed to taking and perhaps, reacting positively to family planning advice. The assurance provided at these clinics for the health and welfare of their children is also an additional factor which could have strengthened their motivation for spacing the birth of their second child. Besides, these clinics distribute contraceptives to eligible acceptors, and many women from the low socio-economic class find it less embarrassing to procure their supply of contraceptives from such clinics for baby care provides an appropriate excuse to visit it.

The present study therefore suggests that the well-baby clinic is the best place to motivate young mothers to accept temporary methods of family planning in order to make a impact on the pregnancy rate.

Summary

Health and family planning education given soon after delivery to primipara from the lower socio-economic group, resulted in a pregnancy rate (32%) which was much lower than that of primiparous women who had not received such information (67%). The average number of months of exposure required to conceive as also the acceptance rate of the immunisation programme for their children were significantly higher in the experimental than in the control group.

ACKNOWLEDGEMENTS

The authors are grateful to Shri. Dilip Shah, Statistician, for rechecking the statistical data, and to Shri. Anil A. Dalal, for clerical assistance.

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APPENDIX

A comparison of the measurements of the various attributes (characteristics) of the experimental and control groups and the results of statistical tests of significance are given below.

Characteristic	Frequency				Results of tests of significance
	Experimental		Control		
1. (i) Age of the	Mean	SD	Mean	SD	SE of diff. ñ= 1.25
mother	21.60	3.71	20.70	3.21	Insignificant
(ii) Age of the					SE diff. ñ = 0.7979
husband	27.30	4.05	26.55	4.02	Insignificant
2. Religion	**Frequency**		**Frequency**		x² value
(i) Hindu	40 (80)		36 (83.72)		x² value is 0.2143
(ii) Muslim	10 (20)		7 (16.28)		df : 1 Insignificant
3. Education					
(i) Illiterate	24 (48)		24 (55.80)		x² value = 3.0340
(ii) Primary	18 (36)		17 (39.53)		d f. = 4. Insignificant
(iii) Secondary	5 (10)		2 (4.65)		
(iv) University	1 (2)		—		
(v) Technical	2 (4)		—		—
4. Occupation of mother					
(i) Housewife	37 (74)		32 (76)		x² Cal = 0.8916
(ii) Service	4 (8)		2 (4)		d f. = 1 Insignificant
(iii) Labourer	9 (18)		9 (20)		
5 Type of family					
(i) Joint	29 (58)		23 (53.74)		x² Cal = 0.1753
(ii) Unitary	21 (42)		20 (46.51)		Insignificant
6. No of other couples in the family					
(i) Nil	25 (50)		25 (58.13)		x² Cal = 2.746
(ii) 1	10 (20)		4 (9.30)		d.f. = 3
(iii) 2	9 (18)		11 (25.58)		Insignificant
(iv) 3 and more	6 (12)		3 (5.97)		
7. No of rooms					
(i) 1	21 (42)		26 (60.46)		X² Cal = 4.7823
(ii) 2	20 (40)		15 (34.88)		d.f. = 2
(iii) 3	9 (18)		2 (4.65)		Insignificant
8. Sex of the child					
(i) Male	27 (54)		23 (53.49)		X² Cal = 2.0437
(ii) Female	23 (46)		20 (46.51)		d.f. = 1 Insignificant

The figures in parentheses represent percentages

APPENDIX (Contd.)

Characteristic	Frequency		Results of tests of significance
	Experimental	Control	
	Frequency	**Frequency**	
9. **Nature of delivery**			
(i) Normal	46 (92)	40 (40.93)	X² Cal = 0
(ii) Forceps	3 (6)	2 (5)	d.f. = 2
(iii) Ceasarian	1 (2)	1 (2)	Insignificant
10 **Weight of the child**			
(i) Below 2 5 Kg.	16 (32)	18 (41.86)	X² Cal = 1.1979
(ii) 2.5 kg. to 3 kg	28 (56)	21 (48.83)	d f. = 6
(iii) 3 1 kg. and above 6	6 (12)	4 (9.30)	Insignificant
11 **Husband's education**			
(i) Illiterate	7 (14)	16 (37)	X² Cal = 6.1965
(ii) Primary	26 (52)	19 (44)	d f. = 3
(iii) Secondary	12 (24)	6 (14)	Insignificant
(iv) University	5 (10)	2 (5)	
12 **Husband's occupation**			
(i) Service	13 (26)	12 (28)	X² Cal = 10.4672
(ii) Business	1 (2)	—	d.f. = 4
(iii) Labourer	7 (14)	16 (37)	Insignificant
(iv) Factory worker	14 (28)	12 (28)	
(v) Skilled worker	14 (28)	3 (7)	
(vi) Study	1 (2)	—	
13 **Interval between marriage and first delivery**			
(i) 12-18 months	17 (34 00)	13 (30.23)	X² Cal = 0.5606
(ii) 19-24 months	17 (34 00)	15 (34.88)	d f. = 3
(iii) 25-30 months	5 (10.00)	6 (13.95)	Insignificant
(iv) 31 months and above	11 (22 00)	9 (20 95)	
14. **Need for spacing**			
(i) Desirous	32 (64.00)	20 (47.00)	X² Cal = 3.359
(ii) Undesirous	3 (6.00)	7 (16 00)	d f = 2
(iii) No opinion	15 (30.00)	16 (37.00)	Insignificant

The figures in parentheses represent percentages

COST-BENEFIT ANALYSIS OF THE FAMILY PLANNING PROGRAMME IN ANDHRA PRADESH (1963-74)[*]

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Introduction

Whether it is worthwhile to invest huge amounts in the family planning programme as against other developmental projects is a subject of controversy. Planners have to selectively invest in those projects which give larger positive returns to the nation as compared to others. The technique of cost-benefit analysis serves as a tool for assessing the economic desirability of a particular project by taking into account all direct and indirect costs and benefits. A cost-benefit analysis of the family planning programme will justify its claim over other projects for investment of funds It has been demonstrated by several research workers that the cost-benefit ratio of population control projects is many times higher than the corresponding ratios of other capital investment projects. In a vast country like India, cost-benefit studies can also be used for assessing the comparative economic efficiency of family planning programmes in various states

Such studies have been reported for the states of Maharashtra, Punjab and Rajasthan Seal[1] has made a cost-benefit analysis of the family planning programmes of a number of states, but only for a three-year period Besides, one of the limitations of his and earlier studies is that they use either the all-India data or the data available from areas other than the area of study, due to the non-availability of relevant data. Examples of such data are the age distribution of acceptors, age specific marital fertility rates, expectation of life at birth, etc. In this study, however, the data pertaining to Andhra Pradesh have been used with proper adjustments, to analyse the performance of the family planning programme in Andhra Pradesh by the application of the cost-benefit technique. The period selected is from 1963-64 to 1973-74.

Sources of Data and Adjustments

Data on the acceptors by methods of family planning viz. sterilisation, IUD and conventional contraceptives, their age distribution, and the annual expenditure incurred on family planning have been taken from the Family Planning Reports of the Director of Medical and Health Services, Andhra Pradesh,[2] and Family Welfare Planning in India, Year Book 1972-73.[3] The age specific fertility rates for Andhra Pradesh are from the Sample Registration Bulletin of the Registrar General of India.[4] The values of e_0^0 for Andhra Pradesh have been borrowed from the "Expert Committee Report,"[5] and have been suitably adjusted for future on the basis of the all-India values given by Raghavachari.[6]

The following adjustments were made in the data for the purpose of the present study:

Age specific marital fertility rates (ASMFR)

Age Specific Fertility Rates (ASFR) obtained through the Sample Registration Scheme for the year 1969 have been used. These rates pertain to rural areas of Andhra Pradesh and have therefore been corrected to make them applicable to the entire State by using the following formula:

$$\text{Corrected ASFR} = \frac{\text{B R (AP)} \times \text{P(AP) 1971}}{\text{B}} \times f_i$$

$$\text{where B} = \sum_{i=15}^{49} f_i F_i$$

B.R. (AP) = Birth Rate for Andhra Pradesh for 1969 (SRS)
P (AP) 1971 = Population as per 1971 Census for Andhra Pradesh.
fi = Age Specific Fertility Rates (Rural) for Andhra Pradesh.
Fi = Number of females in ith reproductive age group, i = 15-19, 20-24,....etc.
B = Number of births.

The corrected age specific fertility rates were inflated by the proportion of married females to total females (1971 Census) to yield the age specific marital fertility rates which are shown in Table 1.

Joint survival ratios

To get a suitable level of e_0^0 for Andhra Pradesh, adustments were made in the earlier projections made by the Expert Committee by using Raghavachari's projections for India Table 2 gives the adjusted values of e_0^0 for Andhra Pradesh.

TABLE 1

Age specific marital fertility rates for Andhra Pradesh

Age group (years)	ASFR (rural)	ASFR corrected	'ASMFR
15-19	140.21	134.75	207.81
20-24	236.73	227.50	249.34
25-29	237.13	227.89	240.94
30-34	173.49	166.73	182.69
35-39	125.12	120.24	136.49
40-44	54.40	52.28	66.55
45-49	19.20	18.45	25.58

Source Registrar General of India, 'Sample Registration Bulletin," Vol VI, No 2, 21

TABLE 2

Expectation of life at birth in Andhra Pradesh

Period	Adjusted values of e_0^0 for	
	Males	Females
1963-67	42.5	40.7
1968-72	45 8	44.0
1973-77	49.1	47.5
1978-82	52.1	51.0
1983-87	54 6	54.0
1988-92	56.9	56.5
1993-97	59.0	58.5
1998-2002	60.0	60.0

Sources : (1) Government of India, Report of the Expert Committee on Population Projections, Table 4, p 29

(2) Raghavachary, S, "Population Projections 1976-2001" *Population in India's Development 1947-2000* Ashish Bose, et al, p. 434.

Based on the level of e_0^0, survival ratios were obtained (by interpolation) from the Model Life Tables of Coale and Demeny.[7] An assumption was made that the husbands are five years older than the wives and the joint survival ratios of the husbands and wives were computed for each five-year period, 1963-67 onwards.

Methodology

The age distribution of sterilised persons and IUD acceptors in Andhra Pradesh is given in Table 3.

TABLE 3

Age distribution of sterilisation and IUD acceptors

Age-group (years)	Sterilisation acceptors	IUD acceptors
15-19	0.91	4.18
20-24	11.13	16.07
25-29	32.61	34.65
30-34	26.04	24.62
35-39	19.03	12.01
40-44	8.14	8.47
45-49	2.14	
Total	100.00	100.00

Source · Directorate of Medical and Health Services, Andhra Pradesh, *Progress of Family Planning in Andhra Pradesh*, 1972, p 24

The cohort approach was adopted to estimate the number of births averted due to the family planning programme in Andhra Pradesh during the period 1963-64 to 1973-74 The potential fertility, i.e. the possibility that the family planning acceptors are likely to have higher fertility as compared to the general fertility level, was not considered as Government involvement in the family planning programme by way of mass camps was high in Andhra Pradesh.

Births averted due to sterilisations

The following assumptions were made: (i) the effectiveness of a vasectomy and a tubectomy is 100 per cent, (ii) tubectomy is generally performed just after childbirth and, (iii) the age at menopause for women is 49 years.

A cohort of 100 sterilised persons was taken every fifth year and followed till all of them passed beyond the age of reproduction as a result of ageing or death. First, the number of births averted by the survivors of these cohorts was calculated for every fifth year. The number of births averted in each single year was then obtained by linear interpolation. The number of births averted due to the sterilisations performed in the year 't' were attributed to the year 't+1,' and so on. A matrix for births averted due to 100 sterilisations and the number of births averted due to the actual number of sterilised persons in each year is presented in column 3 of Table 4.

TABLE 4

Sterilisation, IUD and C.C. acceptors and births averted due to them during 1963-64 *to* 1973-74

Year (1)	No. of sterilisa-tions (2)	No. of births averted (3)	No. of IUD acceptors (4)	No. of births averted (5)	No of C C users (6)	No. of births averted (7)	Total no. of births averted (8)
1963-64	3,925	6,982	—	—	10,701	2,486	9,468
1964-65	7,600	13,565	—	—	16,409	3,812	17,377
1965-66	28,944	51,831	9,222	4,468	24,074	5,595	61,894
1966-67	58,267	104,688	53,792	26,070	24,074	5,595	136,353
1967-68	170,796	307,879	54,072	26,215	6,301	1,465	335,559
1968-69	205,071	370,912	17,459	8,467	10,166	2,364	381,743
1969-70	208,678	380,875	9,204	4,467	46,717	10,864	396,206
1970-71	225,064	414,536	9,874	4,795	45,125	10,495	429,826
1971-72	272,321	506,092	19,612	9,529	114,199	26,560	542,181
1972-73	339,767	637,073	14,864	7,227	51,003	11,863	656,163
1973-74	142,778	270,076	26,587	11,393	71,696	16,679	301,148
Total	663,211	3,064,509	209,386	105,631	420,465	97,778	3,267,918

Source : 1 Director of Medical & Health Services, Andhra Pradesh, Hyderabad, *Progress of Family Planning Programme in Andhra Pradesh upto September 1972*, pp 18-20

2 *Family Welfare Planning in India, Year Book 1972-73*, pp. 57-60.

Births averted due to IUDs

The assumptions made were that: (i) the IUD is generally inserted just after menstruation, (ii) the IUD is 95 per cent effective, (iii) the maximum retention period of the IUD is 5 years, and (iv) the continuation rates for IUDs at the end of the first, second, third and fourth years are 70, 50, 40 and 10 per cent respectively.[8]

As in the case of sterilisations, a cohort of 100 women using IUDs was taken at five-year periods and followed every fifth year till they passed the reproductive age. The number of births averted due to these IUD acceptors was obtained every fifth year and the number of births averted annually was calculated by linear interpolation. The number of births averted annually was multiplied by the respective retention rates and the 95 per cent effectiveness of IUDs to form a matrix. The adjusted number of births averted due to these IUD acceptors multiplied by the actual number of IUD users each year and the total number of births averted due to IUDs are shown in column 5 of Table 5.

TABLE 5

Cost per birth averted

Year	Total no of births averted	Total expenditure (Rs in lakhs)	Cost per birth averted	Cost per birth averted after pro-rating the building cost
1963-64	9,468	6.83	72.14	—
1964-65	17,377	16.57	95.36	—
1965-66	61,894	42.38	68.47	—
1966-67	136,353	117.38	86.09	—
1967-68	335,559	152.13	45.34	—
1968-69	381,743	218.20	57.16	—
1969-70	396,206	328.50	82.91	71.87
1970-71	429,826	507.79	118.14	97.47
1971-72	542,181	623.04	114.91	90.21
1972-73	656,163	681.72	103.89	95.41
1973-74	301,148	545.65	181.19	177.45

Source : Director of Medical and Health Services, Andhra Pradesh, Hyderabad, *Progress of Family Planning Programme in Andhra Pradesh upto September 1972*, p 30

Births averted due to conventional contraceptive users

A similar procedure, as in the case of IUDs, was followed, and the age distribution of IUD acceptors was also used for conventional contraceptive users, and the effectiveness of conventional contraception was assumed to be 60 per cent. The number of births averted due to conventional contraceptive users is shown in column 7 of Table 4.

Analysis of cost per birth averted

The annual expenditure incurred by the programme, the number of births averted each year and the cost per birth averted are presented in Table 5. Though an upward trend was generally noticed for this period, the results showed an erratic trend. Cost data, in this crude form, cannot indicate the real trend because fixed costs like expenditure on buildings and purchase of vehicles though actually incurred in one year, have to be spread over a number of years. A finer analysis of costs, however, can be done only when an itemwise break-up of expenditure is available. Such a break-up was available for five years from 1969-70 to 1973-74. An attempt was, therefore, made to classify the total cost into two categories viz, fixed and variable, during this five-year period. The expenditure on buildings was prorated over a period of 20 years, assuming the life of a building to be 20 years. There was no expenditure on the purchase of vehicles. Though the cost per birth averted (Table 5) was reduced after prorating, the erratic time trend persisted.

It was felt that perhaps a study of the two separate components of cost viz. fixed and variable, would furnish some clue to the erratic element observed, because variable costs are directly related to per-

TABLE 6

Cost per birth averted by total, fixed and variable costs and indices of costs, and performance

Year	Total cost per birth averted (Rs.)	Break-up of cost		Indices of cost & performance		
		Fixed	Variable	Fixed	Variable	No. of births averted
1969-70	71.87	47.67	24.20	100	100	100
1970-71	97.47	70.28	27.18	147.45	112.31	108.49
1971-72	90.21	60.15	30.06	126.18	124.26	136.84
1972-73	95.44	54.55	40.36	114.93	168.93	165.61
1973-74	177.45	139.28	38.16	292.17	157.69	76.01

Source : Director of Medical and Health Services, Andhra Pradesh, Hyderabad. Expenditure Statement for 1969-70, to 1973-74 (Unpublished) formance while fixed costs are related to the infrastructure of the programme. Therefore, various items of expenditure were grouped under fixed and variable costs. The fixed costs included (i) direction, technical advice and supervision, (ii) Rural and Urban Family Welfare Centres, (iii) MCH and immunization programmes, (iv) mass education, (v) training and research, and (vi) buildings. The variable costs included (i) compensations, (ii) transport, and (iii) services and supplies. Table 6 gives a break-up of the cost per birth averted into fixed and variable components. The ratio of fixed to variable costs was 2 : 1 in 1969-70; 2.6 : 1 in 1970-71; 2 : 0 in 1971-72; 1.3 : 1 in 1972-73; and 3.6 : 1 in 1973-74.

To study the trend of performance as well as of fixed and variable costs per birth averted from 1969-70 to 1973-74, indices were constructed taking 1969-70 as the base year. This is presented in Table 6. It is obvious that the fixed cost component is inversely related to performance, while the variable component bears a direct relationship with performance i.e., if the performance improves consistently from year to year, the fixed cost per birth averted should consistently decline. Since performance depends on many factors like mass camps, increased incentives, etc. both the performance index as well as the fixed cost index were observed to fluctuate. Over a period of time, since the hard core remains, performance is likely to go down and the fixed cost per birth averted is likely to increase e.g. during 1973-74.

In short, a dangerous feature is the size of the infrastructure of the programme, which has grown sizeably and has heavy overhead costs. The programme, therefore, will not be economical, unless performance also keeps pace with it, as is evident from the indices in Table 6. In 1970-71, with a marginal increase of 8 points in the performance, the fixed cost went up by 47 points. But when performance increased by another 28 points in 1971-72, the fixed cost component declined by 21 points. Similarly, in 1972-73, performance rose by a further 29 points and the fixed cost fell some 12 more points. But, in 1973-74, performance fell 24 points below the base year and fixed costs shot up by 192 points above the base year. The variable component has been generally moving in the same direction as performance.

It appears that instead of investing more in items of fixed cost, the policy should be to utilise the available infrastructure fully and improve performance. The built-in capacity of the programme is wide enough to permit the diversion of a major portion of the budget to variable cost items.

Value of births averted

The money value of an averted birth is equal to the money value of the benefits of the averted birth minus the money value of the loss incurred by the nation. In this case, "benefit" denotes the expenditure on comsumption requirements throughout life, which the nation would save if the child is not born and "loss" denotes the contribution to the national product, which the child would have made during his working life and which the nation has forgone. Both loss and benefit are spread over a number of years. Thus, the present value of an averted birth is estimated by discounting it generally at a 10% rate.

Although the procedure of estimation is complicated, many researches have estimated the value of an averted birth. As the whole approach is based on a number of assumptions, the available estimates differ by a wide margin, as shown in Table 7.

TABLE 7

Value of an averted birth

Source	Value of an averted birth	Discount rate (%)	Effective year
Stephen Enke	6000	Undiscounted	1960-61
	690	10	„
Robert Repetto	1500	10	„
George Simmons	7800	10	1967-68
R. N. Basu	3500	10	—
L. N. Dahiya	5100	Undiscounted	1974
V. S. Badari*	1300	10	1961

Source 1 Mehta, R., "Review and analysis of cost-benefit studies", *Studies in Population and Family Planning in India*, p 127

*2. Sharma, T. L., "Cost-benefit analysis of family planning programme in Punjab Zone," Seminar Paper 1969-70, p 17

While reviewing these estimates, Mehta feels that a conservative estimate of benefits per birth averted is Rs. 1500 (Repetto) at 1960-61 prices which works out approximately to Rs. 2700 at 1970-71 prices. This estimate is taken in this paper to calculate the cost-benefit ratio.

Cost-benefit ratios

Cost-benefit ratios have been calculated as indicators for comparing the economic efficiency of the programme from year to year.

TABLE 8

Cost-benefit ratio of the family planning programme in Andhra Pradesh

(1963-64 *to* 1973-74)

Year	No. of births averted	Value of births averted at 1970-71 prices (Rs in lakhs)	Expenditure at 1970-71 prices (Rs in lakhs)	Cost-benefit ratio at 1970-71 prices
1963-64	9,468	255.64	10.89	1 : 23.5
1964-65	17,377	469.18	24.48	1 : 19.2
1965-66	61,894	1671.14	55.69	1 : 30.0
1966-67	136,359	3681.69	133.38	1 : 27.6
1967-68	335,559	9060.09	171.32	1 : 52.9
1968-69	381,743	10306.06	238.73	1 : 43.2
1969-70	396,206	10697.56	292.64	1 : 36.6
1970-71	429,826	11605.30	418.94	1 : 27.7
1971-72	542,181	14638.89	459.24	1 : 31.9
1972-73	656,163	17716.40	517.40	1 : 34.2
1973-74	301,145	5131.00	339.30	1 : 24.0
Total	3,267,918	88233.95	2662.01	1 : 33.1

Source Computed from Tables 4 and 5

These have been presented in Table 8. In calculating the cost-benefit ratios, both the value of births averted and the expenditure incurred by the programme have been adjusted to constant prices at the 1970-71 price level, using the index number of wholesale prices for all commodities.[9, 10] The trend, as seen from Table 8, has been erratic. It has been highest (1 : 52.9) in 1967-68 and lowest (1 : 19.2) in 1964-65. The variation in the cost-benefit ratio has been mainly due to the relative performance of the programme. On an average, during 1963 to 1974, the family planning programme in Andhra Pradesh had a cost-benefit ratio of 1 : 33.1. This justified the huge amount invested in family planning and can also be regarded as an indicator of the high economic efficiency of the programme. The absolute values of these ratios cannot be compared with the ratios for the whole of India and other States given by Seal,[11] due to differences in methodology. It, can however, be noted that even Seal's study shows that when cost-benefit ratios are considered, Andhra Pradesh has consistently been among the first five states.

Conclusion

The study broadly indicates that in Andhra Pradesh, on an average, the cost-benefit ratio of the family planning programme during 1963 to 1974 has been quite high, but the trend has been erratic mainly due to the relative performance of the programme. The trend of performance can be improved by making full use of the available infrastructure and reducing the overhead component of the total cost.

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A RETROSPECTIVE STUDY OF THE DELIVERY RATIO AND POST-PARTUM STERILISATION IN MISSION HOSPITALS OF INDIA

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The All India Hospitals Post-Partum Programme was initiated by the Government of India in its fourth Five-Year Plan. The objective of this scheme was to accelerate the progress of the national family planning effort. Two criteria were considered for the selection of hospitals for the post-partum programme viz., that (i) the institution should provide evidence of conducting 3,000 or more deliveries and abortions annually, and (ii) medical colleges and training institutions are eligible even if their work load is less than 3,000 deliveries and abortions per year.

Initially, 40 hospitals were selected for this programme but by the end of 1973, 124 hospitals were participating in it. These included 90 hospitals attached to medical colleges, 2 hospitals attached to post-graduate medical institutions and 32 large maternity/district hospitals. Two of our teaching institutions namely—the Christian Medical College, Vellore; the Christian Medical College, Ludhiana, and a non-teaching institution—St. Stephen's Hospital, Delhi, which fully satisfied the criteria laid down by the Government of India, were selected to participate in this programme.

The Family Planning Project of the Christian Medical Association of India had a membership of over 250 institutions at the end of 1973. The majority of these are women's and children's hospitals. As such, they cater largely to obstetrical and gynaecological cases, and since 1966, also implement the family planning component of the programme.

The post-partum approach is vital in the sense that, in a hospital situation, the target population constitutes the women attending the Ante-natal and the Out-Patient Departments, the eligible group being chiefly that which attends the Ante-natal Clinic. It is during this period that the individual is most receptive to the advice of the doctor, and during which the foundation for a good rapport between the doctor and the patient could be laid. which if established and taken full advantage of, could motivate these women to accept one or the other method of family planning after their delivery. The same is true with regard to the women who attend the other departments of the hospital, though a female population of proven fecundity can largely be found among obstetric cases.

In its various member hospitals the CMAI Project registered an increasing number of female sterilisations per 100 deliveries during the years 1969 to 1973, the figures being 19.7, 20.8, 23.4, 24.3 and 26.1 respectively over these years. Although the programme was not labelled as a post-partum programme and was not covered by the various additional personnel and monetary inputs provided in the Government programme, it can still be considered a post-partum programme since the majority of our acceptors (nearly 85%) accepted sterilisation after delivery and before they left the hospital under the regular programme. The data indicate that in CMAI institutions, direct acceptors constituted over 20% of the obstetric and abortion cases, which conform with the target laid down by the national post-partum programme.

Similarities and Differences between the Government Post-Partum Programme and the CMAI Family Planning Project

The Government programme includes only those institutions which have conducted about 3,000 or more deliveries and abortions annually, teaching hospitals and training institutions are however, exceptions to this requirement, whereas the CMAI Project does not insist upon this criterion.

With reference to objectives, both programmes aim at maximising the extent of effective contraceptions among the target population in the community surrounding the hospital and/or institution by focussing primarily on obstetric and abortion cases, and secondarily, on other types of patients. To fulfil this objective, the Government has strengthened family planning services in the participating hospitals by the provision of additional inputs in the form of staff, equipment and buildings which are financed by cent percent grants from the Centre to the states. Supplementary funds are also given so as to improve maternal and child health services. These inputs are totally absent in the CMAI programme. With the exception of three teaching institutions, other hospitals under the CMAI programme are not covered under this grant.

tives

e study was carried out with the following objectives in view:

ssess the percentage variation in abortion and obstetric

ine the delivery ratio in the various years studied;

(iii) to assess the proportion of obstetric and abortion cases undergoing sterilisation;

(iv) to obtain a region-wise break-up of CMAI hospitals and their performance in post-partum sterilisation per 100 deliveries and per 100 abortion cases respectively;

(v) to assess the proportion of direct and indirect acceptors in the programme, and

(vi) to compare the post-partum programme performance for 1972 and 1973 with that of the Government, taking into consideration both direct and indirect acceptors.

Area, Period of Study and Material

An average of 217 member mission hospitals scattered all over the country were studied between 1969 and 1973, the year 1969 being considered as the base year when data collection regarding the obstetric and abortion cases attending the hospitals was initiated. The study covers an average of 231 hospitals over the five-year period In 1967, only 217 hospitals sent the returns in respect of obstetric and abortion cases, however the returns increased to 241 in 1971; and again declined during 1972 and 1973, to 238 and 228 respectively. The analysis is based only upon female sterilisations in the case of direct acceptors and all methods of contraception in the case of indirect acceptors.

Delivery Ratios in Member Mission Hospitals during 1969-1973:

Percentage Variation in Obstetric and Abortion Cases

Table 1 shows the number of obstetric cases attending the member mission hospitals during 1969 to 1973 and the variation in delivery

TABLE 1

Percentage variation in obstetric and abortion cases with base 1969

	1969	1970	1971	1972	1973
Obstetric cases	80,942	86,761 (+7.2)	94,700 (+17.00)	89,659 (+10.8)	88,742 (+9.6)
Abortion cases	8,258	9,120 (+10.4)	9,878 (+19.6)	7,394 (—10.5)	7,394 (—10.5)
Obstetric and abortion cases	89,200	95,881 (+7.5)	104,578 (+17.2)	97,053 (+8.8)	96,136 (+7.8)

Figures in brackets indicate percentage variation as compared to the base year 1969.

ratios with 1969 as the base year (100). The delivery ratios exhibited an increase for all the five years when compared to the base year. The increase was significant in 1971. A similar trend was observed in the case of abortions though a negative trend was noticeable in 1972 and 1973. When obstetric and abortion cases were considered together against the base year, a 17% increase was registered in 1971, with a decline thereafter. On an average, each hospital had an estimated number of 418 obstetric and abortion cases per year. This indicates the magnitude of the work involved in this area alone, apart from the general and other specialised services rendered by the other departments of the hospital.

Ratio of Post-Partum Tubectomies to total Obstetric and Abortion Cases

A significant measure of the effectiveness of the family planning services would be the ratio of post-partum tubectomies to total deliveries, taking into consideration the obstetric and abortion cases. Table 2(a) shows that this ratio with respect to deliveries ranged from 19.7 per 100 in 1969 to 26.1 in 1973, while with respect to abortions, the overall ratios varied from 3.5 in 1969 to 12.1 in 1973 (Table 2b). In both cases the percentage of women sterilised showed a steady increase over the years. When we take into account the total number of obstetric and abortion cases, as shown in Table 2(c), the overall ratio worked out to 18.2 per 100 cases in 1969 which increased to 25 in 1973.

Regional Variations in Post-Partum Sterilisation

The hospitals were classified on the basis of the regional delineation pattern of the 1971 Census report. Accordingly, the country was divided into five zones and the respective states and hospitals located in them were studied separately as shown in Table 3. The zonal classification was adopted because it is difficult to involve several variables to bring out inter-state differentials especially when the mission hospitals have a clientele drawn from a heterogeneous community. Further, the success of the hospital programme depends upon the enlightened policies of the respective state governments as well as the extent to which the hospital has established rapport with the local state authority in augmenting the programme. However, the all India picture is satisfactory with regard to the incidence of sterilisation among both obstetric as well as abortion cases (Table 3). This figure is fairly consistent through the years with a gradual tendency to increase.

TABLE 2

Post-partum programme performance through the years 1969-1973

(a) Obstetric cases

1969			1970			1971			1972			1973		
No of deliveries	No. sterilised	%	No of deliveries	No sterilised	%	No of deliveries	No sterilised	%	No of deliveries	No. sterilized	%	No. of deliveries	No. sterilized	%
80,942	15,930	19.7	86,761	18,061	20.8	94,700	22,170	23.4	89,659	21,757	24.3	88,742	23.159	26.1

(b) Abortion cases

1969			1970			1971			1972			1973		
No of abortions	No. sterilized	%	No. of abortions	No sterilized	%	No of abortions	No sterilised	%	No of abortions	No. sterilised	%	No. of abortions	No sterilised	%
8,258	288	3.5	9,120	579	6.3	9,878	717	7.3	7,394	729	9.9	7,394	893	12.1

(c) Obstetric + Abortion cases

1969			1970			1971			1972			1973		
No. of dels. + abrns.	No. sterilised	%	No of dels + abrns	No sterilised	%	No of dels + abrns.	No sterilised	%	No. of dels. + abrns	No. sterilised	%	No. of dels. + abrns.	No. sterilised	%
89,200	16,218	18.2	95,881	18,640	19.4	1,04,578	22,887	21.9	97.053	22,486	23.2	96,136	24.052	25.0

TABLE 3

Region-wise break-up of post-partum sterilisations per 100 obstetric and abortion cases

Zones	States	1969		1970		1971		1972		1973	
		Obst.	Abrns.	Obst	Abrns.	Obst	Abrns.	Obst	Abrns.	Obst.	Abrns.
		%	%	%	%	%	%	%	%	%	%
Northern	Kashmir	2.2	—	19.4	—	22.9	—	26.2	—	40.10	6.9
	Punjab	5.2	1.4	5.9	3.5	3.6	2.7	22.3	0.9	7.4	9.5
	Haryana	12.0	3.4	7.7	6.7	10.6	31.7	11.7	65.8	84.4	—
	Rajasthan	13.4	2.0	41.4	—	14.2	—	24.8	8.2	88.0	—
	Delhi	7.2	1.2	5.0	0.6	8.8	0.2	10.1	7.3	9.6	9.5
	Himachal Pradesh	21.7	18.9	24.7	51.8	22.0	9.2	20.8	22.2	19.4	10.5
	North Zone	7.9	2.7	8.1	3.3	8.0	4.6	15.2	10.3	12.3	8.8
Central	Uttar Pradesh	13.1	3.4	11.5	8.4	12.6	3.9	10.9	5.4	15.9	7.7
	Madhya Pradesh	13.9	2.7	19.6	2.4	18.9	25.5	29.9	8..6	22.9	7.1
	Central Zone	13.5	3.3	19.6	5.9	18.9	10.8	18.5	6.4	19.0	7.5
Eastern	Bihar	8.3	5.2	7.7	13.7	10.8	19.0	10.6	35.1	17.4	37.5
	Orissa	5.5	1.2	7.9	2.0	10.2	3.5	10.6	2.2	19.1	5.8
	West Bengal	15.0	20.3	21.4	16.7	57.3	—	38.3	34.1	29.5	20.8
	Assam	15.4	7.3	23.9	6.4	15.2	11.1	16.1	16.2	22.3	5.7
	Eastern Zone	10.2	6.4	11.5	9.7	14.6	10.5	14.7	19.2	20.5	15.6
Western	Gujarat	17.5	1.5	19.6	1.8	26.0	3.9	19.6	3.6	13.8	3.9
	Maharashtra	25.8	3.5	28.9	4.8	42.8	10.4	47.1	10.7	44.1	18.6
	Western Zone	24.6	3.0	27.7	4.3	41.0	9.4	42.1	9.6	38.1	15.9
Southern	Andhra Pradesh	33.6	9.8	36.3	14.0	40.7	14.8	42.3	18.6	48.1	13.2
	Karnataka	12.4	1.0	15.5	3.4	18.5	6.5	19.8	9.4	20.7	14.2
	Kerala	18.1	2.3	18.0	6.1	19.0	5.1	19.0	3.9	18.3	16.5
	Tamil Nadu	19.1	1.6	17.0	6.7	21.1	4.4	19.0	6.2	22.0	11.8
	Southern Zone	24.1	4.0	24.4	7.5	27.7	6.9	27.2	8.9	29.8	13.0
	All India Hospitals	19.7	3.5	20.8	6.3	23.4	7.3	24.3	9.9	26.1	12.1

(Classification of regions is as per census report 1971)

North Zone

The North zone comprises of the states of Jammu and Kashmir, Punjab, Haryana, Rajasthan, Himachal Pradesh and the Union Territory of Delhi. The incidence of post-partum sterilisations which was 7.9 per 100 deliveries in 1969 increased to 15.2 over the five-period with a decline of 3% in 1973. It is rather difficult to explore the reasons for such a decline except to conclude that it may be a cyclical phenomenon. The incidence of sterilisations among abortion cases followed a similar trend.

Central Zone

The Central zone comprises the largest states in India both population and area-wise, namely Uttar Pradesh and Madhya Pradesh. The incidence of sterilisations was around 19 per 100 deliveries in all the years except 1969, which had the lowest incidence of 13 5. With respect to sterilisations among the abortion cases, fluctuations were seen through the years 1969-1973; 1971 recorded the highest incidence of sterilisation (10.8%).

Eastern Zone

In the Eastern zone comprising of Bengal, Bihar, Orissa and the erstwhile state of Assam, a gradual increase in the number of sterilisations among obstetric cases was observed, with the highest in 1973 This trend was (20.5) not repeated in the case of abortion acceptors, where a peak sterilisation acceptance (19.2%) was observed in 1972, which declined to 15.5 in 1973.

Western Zone

The best performance of the Project's member hospitals was observed in the Western zone constituted by the states of Maharashtra and Gujarat. The incidence of sterilisations among obstetric cases steadily increased upto 1972 with 1973 registering a figure of 38%. The years 1971 and 1972 were significant because they reached the highest percentages of 41 and 42 sterilisations per 100 obstetric cases admitted to the hospital. Following an increasing trend in 1973, a record of 15.9 sterilisations per 100 abortion cases was recorded.

Southern Zone

The Southern zone consisting of the states of Andra Pradesh, Karnataka, Kerala and Tamil Nadu, was the only region which had almost maintained an evenly and gradually increasing trend with respect to the incidence of sterilisations among obstetric cases. The percentage increase over the years was very consistent. The incidence of sterilisations among the abortion cases also increased considerably with a record performance of 13% in 1973.

Inter-zonal Variation

The Western and Southern zones recorded creditable performances and could be termed as "high performance" areas with over 20 sterilisations per 100 obstetric cases through the years 1969-73. The Central and Eastern zones could be termed as "medium performance" areas which have performed 19 and 20.5 sterilisations in the year 1973, and have been fairly consistent in their performance over the years under study. The Northern zone has been termed as a "low performance" area, since the performance falls very short of the performance of the project member hospitals in other zones.

Direct Acceptors

The definition laid down by the Government of India in its post-partum programme had been strictly adhered to while analysing the data related to "immediate direct" and "late direct" acceptors. "Immediate direct" acceptors are those who accept contraception after delivery/abortion, but before being discharged from the hospital, while "late direct" acceptors are those who accept contraception within three months of delivery/abortion after being discharged from the hospital.

Indirect Acceptors

Indirect acceptors are all acceptors other than those included under direct acceptors. Women who accept a contraceptive method three months after the termination of their last pregnancy are also included under this category. The total acceptors would thus be the sum total of both direct and indirect acceptors. The Government programme considers acceptors of tubectomies, vasectomies and all methods of family planning among the category of direct acceptors for analysis, while our hospital programme considers "direct acceptors" as only those who accept tubectomy as a method of fertility control, since we had not proposed to collect data regarding the husbands who underwent a vasectomy during the post-partum period of their wives.

Table 4 shows the percentage of direct acceptors among the obstetric and abortion cases. The Government's post-partum programme lays specific targets to ensure that out of every 100 deliveries/abortions, at least 20 tubectomies are performed and at least 10 others accept one or the other method of family planning other than tubectomy. It is rather interesting to note that with the excep-

TABLE 4

Year-wise tubectomy performance among obstetric and abortion cases and in relation to total tubectomy operations

		1969	1970	1971	1972	1973
Number of obstetric and abortion cases		89,200	95,881	1,04,578	97,053	96,136
Post-partum sterilisations	No.	16,218	18,640	22,887	22,486	24,052
	%	18.2	19.4	21.9	23.2	25.0
Total number of tubectomies performed		18,476	22,325	25,576	26,296	27,854
% of post-partum sterilisations to total tubectomies		87.8	83.5	89.5	85.5	86.4

tion of 1969 and 1970, our project attained these specified targets. In fact, the performance had exceeded the target by 1.9% in 1971; 3.2% in 1972; and 5% in 1973. As already pointed out, our analysis considered only women accepting tubectomies as "direct acceptors". With the availability of data regarding direct acceptors taking one or the other methods of family planning besides tubectomy, there is every reason to believe that our performance would have been very near to if not more than, the target laid down by the Government.

Indirect Acceptors (CMAI Project)

Acceptors of IUD, oral contraceptives, Nirodh, vasectomy and tubectomy (non post-partum) are included under "indirect acceptors". The proportion of such acceptors in 1969 was 18 9%. This increased to 27.5% at the end of the five-year study period (Table 5). The years 1970 and 1971 recorded low acceptors or rates of 17.3 and 15.5 respectively. As already pointed out some husbands might have undergone vasectomy during their wives' post-partum period. But, in the absence of such information, such cases have been treated as indirect acceptors.

The Government programme also envisages that the total number of acceptors should be 60% of the obstetric and abortion cases including direct and indirect acceptors. The percentage of acceptors (direct and indirect) was 37.1 in 1969 and 52.5 in 1973. Although it was only 36.7 in 1970 a gradual increase was observed thereafter.

TABLE 5

Indirect acceptors, 1969-1973

		1969	1970	1971	1972	1973
Obstetric + Abortion cases		89,200	95,881	1,04,578	97,053	96,136
Indirect. Acceptors	No.	16,883	16,596	16,218	24,249	26,451
	%	18.9	17.3	15.5	25.0	27 5
Percentage of total acceptors (Direct + Indirect) to total obstetric and abortion cases		37.1	36.7	37.4	48.2	52.5

Comparative Performance—Government and CMAI programmes

Table 6 shows a comparision of the post-partum programme performance of the Government and the CMAI Family Planning Project for 1972 and 1973. The Government programme figures for direct acceptors of all methods per 100 abortion and obstetric cases were 22.5 and 25.2 respectively. CMAI performance as reflected against tubectomies only was 23.2 and 25.0 as compared to 12 and 13.2 in the Government programme for the two years in question.

TABLE 6

Comparative statement of post-partum programme performance of Government and CMAI programmes, 1972 *and* 1973

Acceptors	Government Programme		CMAI Family Planning Project	
	1972 (%)	1973 (%)	1972 (%)	1973 (%)
(a) Direct acceptors	22.5	25.2	N.A.*	N.A.
(i) Tubectomy	12 0	13.2	23.2	25.0
(ii) Other methods	10.5	12.0	N.A.	N.A.
(b) Indirect acceptors	28.3	29.8	25.0	27.5
(c) Overall programme	50.8	55.0	48.2	52.5

The figures represent family planning acceptors per 100 abortion and obstetric cases.
* Not available.

The percentage acceptance of methods was 28.3 in 1972 and 29.8 in 1973 in the Government programme and 27.5 as indirect acceptors in the CMAI programme. The overall programme performance was

50.8 and 55 for the former programme as against 48.2 and 52.5 for the latter, duriny the two years respectively.

The achievement of the Government post-partum programme could be attributed to the extra inputs provided to the participating institutions in terms of buildings, equipment, transport, maternal and child health services, supplementary health programmes and staff. These inputs were totally absent in the participating hospitals of the CMAI Project. However, it is gratifying to note that the difference in the overall performance is only marginal.

Discussion

The department of Obstetric and Gynaecology of a hospital serves both pregnant women as well as those who come with symptoms of abortion. Of these two groups of women, the latter are considered to be more highly motivated for purpose of birth control, since they have resorted to unscientific procedures of pregnancy termination. This department plays a very significant role in the education of these clients since it concentrates upon a sector of the female population of high fertility, at a crucial period during which it is found to be most receptive. Hence, it is needless to point out that this is good place to start the educational programme, although other departments in a hospital situation cannot be underemphasised, especially the paediatric department. Hence intra-hospital education serves as one of the most important and integral parts of a large community contraception programme It is observed that the majority of our sterilisations are voluntary in nature and occur in the immediate post-partum period. Our experience indicates that more than 20% of the women who deliver would readily agree to post-partum, abdominal sterilisation. It is here that the break-up of sterilisations among the obstetric and the abortion cases becomes significant and one can make a clear distinction from the programme point of view. These figures are not available for the Government post-partum programme. The percentage of abortions to total deliveries is approximately 10% as against 14.8% reported by the Government. As our data is countrywide, we have come across certain areas, particularly the member hospitals in Andhra Pradesh and Maharashtra, which have achievements in the range of 33.6 to 48.1 and 25.8 to 44.1 per 100 obstetric cases. This achievement is partly due to the enlightened policies adopted by the respective state governments in providing liberal incentive money to the concerned hospitals to carry out the programme in an intensive manner. The phenomenal success of the participating hospitals is due to the integrated maternal and child health approach, which has been operative in the mission hospitals over a very long period. Further, the majority of the clientele are drawn from among the rural population and hospital programmes are usually tailored to include general preventive and social medicine, hygiene and clinical diagnosis and treatment. On the other hand, the rapport established by these same hospitals has created confidence in the minds of couples for accepting voluntary sterilisation without much hesitation. Some of the innovative programmes developed by the CMAI Family Planning Project, especially the integrated community health programme, family survival assurance plan and free delivery-cum-sterilisation services have mostly motivated women to realise the importance of the small family norm. Besides, free facilities provided in the form of preventive procedures of immunisation, nutritional supplements, minimum medical care and regular follow-up of the child and the mother for one year contribute in a large measure to the success of this programme. In some of the hospitals, it is the change in the attitude and approach of the senior executives of the hospitals, viz., the Medical Superintendent, Nursing Superintendents and the nurses and administrators that has been mainly responsible for the growing popularity of the voluntary sterilisation programme, apart from the job-oriented training programmes and intensive training programmes conducted by the mobile regional training teams of this Project.

Conclusion

The above results have had an impelling effect on the development of an innovative project through the provision of some of the extra inputs which are being provided at present in the Government post-partum programme, to some of our member institutions which have a delivery and abortion load ranging between 100-500 per annum. The inputs which are contemplated are in the nature of additional personnel, transport grants and clerical assistance. It is only wishful thinking that these added inputs will provide better results.

ACKNOWLEDGEMENTS

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ACCEPTOR-CHARACTERISTICS OF WOMEN UNDERGOING TUBECTOMY*

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Voluntary sterilisation, whether in the male or in the female, is a permanent and very reliable method of fertility control. The aim of this paper, which is a part of a larger research project, is to study and analyse the factors which influence women who volunteer for tubectomy as a method of family planning. This knowledge is expected to be of help to administrators and policy-makers in popularising the method.

Methodology

The five hundred couples of which the wives had registered for the tubectomy operation at three family planning centres in Baroda between 1969 and 1971 constituted the study sample. Of these, 54 were from the S.S.G. Hospital, 22 from the Primary Health Centre, Padra, and 424 from Jamnabai Hospital, Baroda. The salient features of the methodology employed and which have been reported in an earlier communication[1] were as follows:

The criteria of selection were the willingness of the couples to participate in the study including follow-up, and secondly, the easy accessibility of the subjects i.e. those living in remote areas were not included. The sample, therefore, does not represent a demographic cross-section. Being a random sample the results are not likely to be contaminated by the selection procedure.

The interviews were conducted with the use of a standardised structured format covering developmental and family history, sexual history and contraceptive use, reasons for preference of tubectomy and their expectations including the after-effects of the method and knowledge of other family planning methods. They averaged about an hour for each couple, and became open-ended after the structured portion was finished. The subjects' social class was determined by employing scales standardised in India: the scales of Kuppuswamy[2] and Pareek and Trivedi[3] being employed for the urban and rural

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populations respectively. Five socio-economic classes were recognised, namely: upper, upper middle, middle, lower middle and lower.

Characteristics of the Acceptors

An analysis of the tubectomy acceptors revealed the following characteristics:

Socio-economic Class: The women were predominantly from the lower middle class (67.2%). This could merely be a reflection of their composition in the general population, about 21.8% belong to middle class families, 8.0% to lower class families, 2.8% to upper middle class and only 0.2% to upper class families. Of the 500 acceptors 379 (75.8%) were from urban areas, and the rest (24.2%) were rural-based. As many as 25.8% lived in joint families and 74.2% in nuclear families. The sample consisted of 448 (89.6%) Hindus and 52 (10.4%) Muslims. Christians and other religious communities were conspicuous by their absence.

Age: The youngest acceptors were two (0.6%) 20 year-old women, both expecting their fourth child and wanting a sterilisation to be performed immediately after delivery. The oldest was 39 and had 13 children. Over a third (40.8%) of the acceptors were in the 26-30 age group and another one-third (32.4%) in the 21-25 age group. About 22% were between 31 and 35 years of age and 4.2% were over 36. Contrary to expectation, they were fairly young, the mean age being 28.6 years.

Number of living children and ideal number of children: About half (50 2%) of the acceptors had between four and six living children when they came to register themselves for the operation, and 41% between seven and nine. There were 35 women (7%) who had 10-12 children, 8 (1.6%) who had 13-15 children, and one woman (0.2%) had 16 children. None had less than two living male chilren. When the acceptors who had the ideal number of children were distributed according to the children's sex (Table 1), the significance became apparent. It is obvious that they could have been motivated to go in for a tubectomy, much earlier. As many as 282 (56.4%) were willing to accept this method after having had two male and one female issues, and further, 165 (33%) after two male and two female issues.

Past contraceptive practice: Only 9.8% of the respondents had ever used a contraceptive method. The majority had been using a family planning method for about 3 years only, though rather

TABLE 1

Distribution of acceptors by sex of living children

Number of children by sex		Acceptors	
Male	Female	Number	Percentage
1	0	0	0
1	1	20	4.0
2	0	2	0.4
2	1	282	56.4
2	2	165	33.0
3	1	7	1.4
3	2	20	4.0
3	3	3	0.6
4	2	0	0
4	3	0	0
5	2	1	0.2
Total		500	100.0

irreghlarly. About one-third had used condoms and about the same number had practised coitus interruptus. None had used the oral pill. Practically all of them had employed contraceptive methods for spacing.

Source of information: The respondents were generally unable to give the first source from which they had received information about sterilisation as a method of family planning, and gave affirmative replies to more than one source. The most important sources were neighbours and friends (88% and most of whom had had the operation), relatives (74.4%), information leaflets (72.2%), husbands (25.8%) and exhibitions (25.4%). Social workers provided information to 9.8%, and family planning clinics to 15% of the respondents. It appears that the husbands had forced the wives to make a decision in 25.8% of the cases, and who if given a choice, would have preferred their husbands to undergo a vasectomy. However, 74.2% would have preferred a tubectomy anyway. Further, 27.2% had doubts about the success of the vasectomy operation while 14.2% did not have any knowledge about it . Among the other reasons mentioned were a vague fear of the occurrence of some biological impairment to the male (11.6%). The husbands of two women had already undergone a vasectomy operation but they had withheld the information. Apparently they were attracted by the incentive. It was encouraging to learn that 490 (98%) would have taken the operation even if the incentive money had been withdrawn. As far as acquiring knowledge about the method was concerned, only three (0.6%) had been aware of the method before marriage (Table 2), but as many as 77.8% had come to know of it by the time they had had three children.

TABLE 2

Time of acquiring knowledge about tubectomy

When knowledge of tubectomy was acquired	Number	Percentage
Before marriage	3	0.6
After first child	76	15.2
After second child	147	29.4
After third child	163	32.6
After fourth child	47	9.4
After fifth child	47	9.4
After sixth child	12	2.4
After more than six children	5	1.0
Total	500	100.0

Comments

The fact that no couple had less than four children and some had as many as sixteen or even more when they underwent the sterilisation operation and that a large majority (93.8%) wanted at the most four children or less before they were willing to accept tubectomy has a message, especially when we consider that 77.8% had learnt about sterilisation before or with the arrival of the third child. It is perhaps worthwhile to reach the mothers at the right psychological moment. The period of their stays at the maternity hospital for delivery of the second child onwards could, perhaps, be utilised for motivating them. This should be an ideal situation when the face-to-face approach can help stimulate social action, develop the right attitudes, supply the correct information and clarify any misconceptions which they may happen to have about the method. The first stage obviously is to create awareness in the minds of the people that such a problem exists and that it affects them as individuals. Population control for the sake of national welfare may not interest them, but for improving their own standard of living, for having sufficient food and clothing or education will create a desirable change in their attitude, especially in these days of rising prices and of things becoming scarce.

The finding that as many as 73.2% were in the age range of 21 and 30 years with 15 to 25 years of reproductive life before them is highly significant. It is anybody's guess as to how much they would have contributed to the population if they had not accepted the tubectomy operation when they did. Therefore, an increase in the age at marriage can be expected to lower fertility as it decreases the reproductive span. The Sarda Act, when amended in 1949 and 1956, raised the legal age of marriage of girls from 14 to 15 and later to 16 years respectively, though there is scope to raise it still further. The sixteenth meeting of the Central Family Planning Board held in Bombay in August 1964 observed that legislative efforts for raising the age at marriage would not solve the problem. Instead, it was suggested that a favourable social climate, be created in order to raise the age at marriage.[1]

Religious objections may come in the way of acceptance of a family planning method. In the present study, 89 6% of the respondents were Hindus, 10 4% Muslims No Christians accepted the operation. Sharma and Bhaskaran[2] concluded in their study of the attitudes of different religious groups towards sterilisation that Hindus favoured it most and Christians the least. However, it is still difficult to explain why not a single Christian had accepted this method in this sample. The sample was fairly large and therefore unlikely to be a biasing factor. In contrast, in the U.S A , people of all religious faiths, ethnic areas, groups, and income and educational strata are making increasing use of this method of birth control. Catholics continue to comprise 25-30% of those helped by the Association for Voluntary Sterilisation to obtain the operation.[3]

This study further indicates that women from nuclear families accepted the method more readily than those from joint families. About three-fourths of the women came from nuclear families. The reason for this could be that in nuclear families, women find it difficult to bring up children unaided and therefore are more inclined to limit their families. It may also be presumed that the adoption of the nuclear family pattern is gaining ground though it cannot wholly account for this. This may be partly due to the fact that a large majority (67.2%) of women were from the lower middle class, where usually both the husband and the wife go to work to supplement the family income. This may act as a negative incentive to have large families, particularly because of the amendments of the Employment of Children Act of 1938 and the Factories Act of 1948 which prohibit the employment of persons below 14 years at night and in dangerous occupations. This Act tends to remove children from the labour market, so that they are not considered as economically productive in urban areas. Otherwise, farmers and landless labourers consider a large number of children as an economic asset.[4]

Cash incentives did not constitute an important motivating factor as revealed by the finding that 98% were willing to undergo a tubectomy even without the incentive. It is important to note that 90.2% had never used any method before and makes it imperative to popularise sterilisation. In comparison with data from the studies of IUD and tubectomy acceptors, Mahapatra and his coworkers[5] highlighted the fact that pill acceptors were a special social group drawn from a small section of the society which was markedly different from the acceptors of other methods of contraception. In India, where most people are illiterate, there is a real need to motivate persons in favour of sterilisation as a method of family planning. Further, it is this section of society for which the family planning programme is really intended. There is also a need to screen the respondents before registering them for the operation and making the follow-up programme effective, as the satisfied tubectomy acceptors themselves act indirectly as motivators when they support the method wholeheartedly.[6]

Summary

The study is based on interviews of 500 couples between 1969 and 1971, using a standardised structured format after the wives had been registered for tubectomy.

The couples were predominantly (57.2%) from the lower middle class. No couple had less than four children and 50.2% had between 4 and 6 children. About (68.2%) wanted 2 or 3 male children before they accepted the method and expressed a desire for one or more daughters in addition to the stated number of sons. A large majority had not been practising any contraceptive method. As far as source of knowledge of the method was concerned, 88% mentioned neighbours or friends as the source. Also, 25.8% revealed that the decision had been forced on them by their husbands and if they had a choice they would have preferred their husbands to undergo a vasectomy. Further, 98% said they would have undergone the operation even if the monetary incentive had been withdrawn.

It appears that the subjects who undergo the tubectomy operation themselves exert the maximum influence in motivating others, especially those who accept it for other reasons like desired family size or the number of male children etc. There is also a need to attempt to change the attitudes of those people who want to have two or three male issues before accepting a method.

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MOTIVES RELATED TO THE DESIRE FOR CHILDREN . A PSYCHOLOGICAL STUDY OF PARENTHOOD .

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Why do people want to have children or not want to have any children? What are the motivations for or against parenthood for women and for men? These are some of the fundamental questions causing much concern to behavioural scientists in general, and family planning experts, in particular. Although it is a matter of individual beliefs, attitudes, values and motivations, and their interplay with a host of other variables at any given moment in a person's life, nevertheless cultural variations are involved too.

A theoretical approach to motivation for childbearing is found in psychoanalytic literature. A central concept in these writings is the wish for a child (or for pregnancy) which Freund viewed as a derivative of the castration complex.[1-4] In an article that provides a more comprehensive, and complex psychoanalytic viewpoint, Kestenberg[5] has discussed the differences between male and female motivations in the context of developmental phases, and has emphasised the role that husbands and children fulfil as organisers of female sexuality.

The literature on "motivation for wanting conceptions," of which a large part is based upon American fertility surveys, has been reviewed by Pohlman.[6] Poffenberger et. al.[7] have reported some motivational aspects of the Indian population. The study reveals certain very important dimensions of the motivating factors leading to childbearing as well as to the limiting of the number of children in an Indian family. Two factors stand out: firstly, there are many plausible reasons for wanting children and each reason may be supported empirically by selectively attending to it. Secondly, very few studies rigorously assess the salience of particular motive—constellations for individuals.

Very few studies have so far attempted to understand the various psychological aspects of parenthood, and, as such, the main purpose of the present investigation has been to explore the socio-psychological mechanism concerned with the desire for children.

Sample

A sample of 50 husbands and their wives was selected from

Jodhpur, Rajasthan. The mean age of the husbands was 38 years (ranging from 26 to 50 years) and that of the wives was 31 years (ranging from 23 to 40 years). Most of the husbands had received some education while most of the wives had not received any formal school education. Issueless couples were excluded from the sample.

Data Collection

An interview schedule, drawn in Hindi, was used for eliciting information on the various motives for childbearing. Half of the items in the schedule were in the positive form and the rest in a negative form. The schedule dealt with five types of motives viz. personal, religious, social, economic, and health.

The data were collected by the junior author through personal visits to each of the households included in the sample on prior appointment. The husband and the wife were interviewed separately but at the same visit. Adequate rapport was established and the following general instructions were given in simple Hindi: "Some people like to have a limited number of children, say, two or three whereas others do not like to fix any limit. One does not really know as to why the first category of people like to fix a limit and why the second category of people do not. I have come to you with the purpose of knowing how you really feel about your desire to have children. There are of course, many more things to ask but I have a limited set of questions which I would read out one after the other. I am sure you will freely and frankly speak out your response to the question which I shall put before you. Let me also, by the way, tell you that your replies to the various questions will be kept strictly confidential. However, in case you have any kind of reservation, please feel free to tell me right now." (For any kind of reservation or doubt, if any, due explanation was given).

Along with these instructions, personal information relating to the age, caste, employment, monthly income, and the number of children (male and female) of the respondents was recorded. Where any child (ren) had not survived, the number and the sex of such children was noted. Each interview took about 45 - 55 minutes.

Results

A comparison was made between the husbands and the wives in relation to the five motives for childbearing. Mean and standard deviations were calculated for each of these motives. The analysis of the data also provided the relative strengths of these motives for the couples.

TABLE 1

Motives for childbearing of the husbands and wives

Motives	Husbands		Wives		t
	Mean	± SD	Mean	± SD	
Personal	36.81	6.91	42.42	4.19	3.41*
Religious	20.46	4.42	23.46	5.63	3.41*
Social	23.28	11.44	31.00	7.17	2.69**
Economic	26.79	11.11	18.63	8.22	3.60*
Health	21.26	3.63	23.45	8.41	3.98*

* Significant beyond a 0.001 level
** Significant beyond a 0.01 level

Table 1 shows significant differences between the husbands and wives on all the five motives for childbearing considered here viz. personal, religious, social, economic and health. On the basis of the obtained mean scores the relative strength of these motives for the responses was analysed. The hierarchical order of these childbearing motives differed for the husbands and their wives. For the former, this order was: personal, economic, social, health, and religious, while for the wives it was personal, social, religious, health and economic.

Discussion

The five motives for childbearing examined here were observed to play differential roles in the respondents and the wives. The wives were more concerned with their health whereas the husbands considered the economic condition of the family more of an obstacle in the begetting of more children. However, the religious motive operated in both cases only as far as the desire to have a son was concerned. Hindu religion places an excessive emphasis on bearing of sons. It is believed that unless one's son performs the obsequies a man's soul cannot go to heaven. The *Aitareya Brahmana* says: "By means of a son have fathers even passed over the deep darkness. The self is born from the self, the son is a ship, well-founded, to ferry over . . . a son is a light in the highest heaven . . . A sonless one cannot attain heaven."

The husband's salvation was considered a matter of great concern to the wife and hence a higher mean score on the religious motives was obtained for the wives than for the husbands. Comparatively lower scores for the religious motive among the husbands indicated less concern for their own salvation. Moreover, Indian women are more religious minded then their counterparts, their behaviour being largely determined by their religious beliefs and values.

The social motive was also found to play an important role in childbearing. Every time a child is born in a family, the husband and wife receive the good wishes of the community in which they live, for it considers the birth of children, one after the other, as a sign of happy married life". So much so that there is a social belief that to see the face of an issueless woman early in the morning is unauspicious. As such, most of these positive and negative social beliefs seemed to serve as motives for childbearing.

The personal motive occupied the first position in the heirarchical order. The parents felt that more children provide a greater sense of personal security to them in their old age; especially in the old joint family system, the burden of the old parents becomes lighter if there are many sons. Consequently, both the husbands as well as the wives gave the highest priority to these considerations concerning their future lives while bearing an indefinite number of children.

The findings of this exploratory study of childbearing motives thus throw sufficient light on these aspects of human behaviour which need to be modified so that population control programmes can become really effective and meaningful.

Summary

This exploratory study was conducted to examine the predominance of certain motives as related to the desire for children. Obviously, it dealt with some of the psychological aspects of parenthood. Five motives were considered viz., personal, religious, social, economic, and health, in an interview schedule administered to 50 husbands and their wives. The husbands were found to have been motivated to bear children for different reasons than were their wives. In the case of the later, the religious and social motives played a significant role while for their husbands personal, economic, and social motives were important.

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INTER-GENERATION PERCEPTIONAL CHANGE IN FAMILY SIZE AND COMPOSITION

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Population pressures, economic crises, aspirations for higher standards of living and the recognition of human rights, have all led to the need for population control. "Population size and population growth have become problematic not only to some demographers, but, to ecologists and environmentalists, economists, public health administrators, politicians and statesmen and informed citizens," observes Bernard Berelson.[1] The realisation of the consequences of a population explosion has led these people to coin slogans like "Zero Population Growth" and to organise a World Population Year in order to create a greater awareness and acceptance of the means of fertility control around the world and particularly in the developing countries.

The success of any programme does not depend upon the realisation of its importance by the few who advocate it or by "informed citizens," but on its acceptability by the general masses. A programme like family planning which, in this country, is working against many social, economic and religious barriers, is entirely dependent, for its success or failure, upon its acceptance by the masses. Social values, economic problems and religious taboos could stand in the way of its adoption by the masses

A positive attitude towards any programme is the first and most important step for the beginning of the adoption process. This paper attempts to find out whether there is any change in the perception of Panchayat members regarding their own family size, and the one they perceive for their son(s). The reasons for wanting to have a particular number of son(s) and daughter(s) in a family are also listed.

The data reported in this paper form a part of a study dealing with the awareness of, attitudes towards, knowledge about and practice of family planning methods among Panchayat members in rural Punjab.[2,3] Seventy male Panchayat members below the age of 60 years drawn from 24 villages in rural Punjab were interviewed

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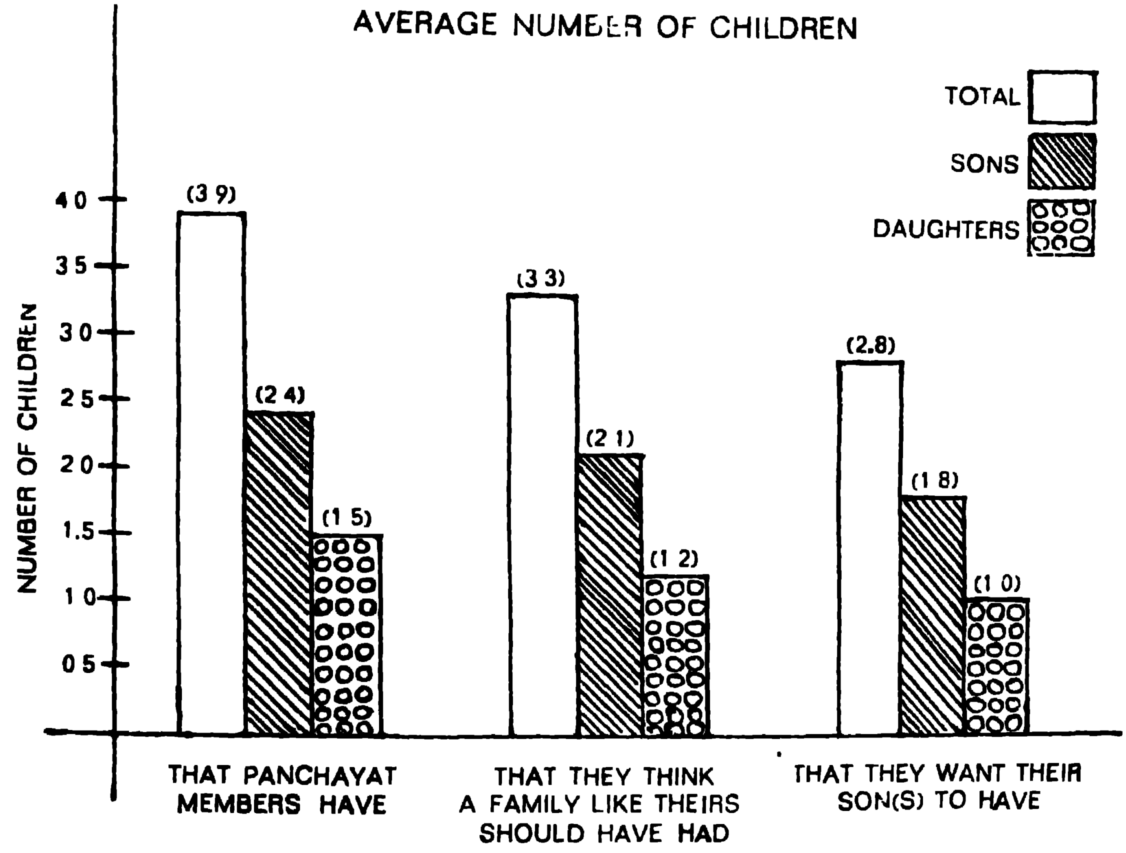
This study is a part of a bigger one which was conducted when the author was working as a Senior Research Officer at the Rural Health Research Centre, Narangwal, Ludhiana, Punjab.

During the survey each respondent was asked three questions, among others, in order to ascertain any change in the desired family size between their generation and that of their children. The questions were: (a) How many children do you have? (b) How many children do you think a family like yours should have had?, and (c) How many children do you want your son(s) to have? The respondents were also asked to enumerate the reasons for wanting their son(s) to have a particular number of son(s) and daughter(s).

Results

A selective and small sample size restricts the generalisation of the trends shown by this analysis. The results which are a mere indication of certain trends, need more investigation to be conclusive.



The diagram above compares the average number of children that the respondents have with the number they think a family like theirs should have and the number that they want their son(s) to have. It reveals a trend for a small family in that in one single generation, a decline of 1.1 children is indicated. It also shows that the majority of people do want to have two sons in addition to a daughter or a particular number of daughters. Also, a majority of them think that there should be one daughter in any family in addition to a son or a certain number of sons.

An open-ended question to ascertain the reasons for wanting their son(s) to have a particular number of son(s) and daughter(s) was asked with the belief that it would also reflect on the respondent's attitude towards having a particular number of son(s) or daughter(s).

Table 1 lists the reasons for the respondents' desire to have a particular number of son(s); 32 (60.4%) gave economic reasons and 21 (39.6%) social. This suggests that the economic structure and

TABLE 1

Reasons for wanting to have a particular number of son(s)

Reasons	Responses	Number of sons wanted			Percentage
		1	2	3	†
Economic					32 (60.4)
	1. 'Agriculture needs at least two sons'.	—	4	3	7 (13.2)
	2. 'Difficult for one son to do all jobs'.	—	5	—	5 (9.4)
	3. 'If one studies, other can work in fields'.	–	5	—	5 (9.4)
	4. 'Less division of property'.	3	—	—	3 (5.7)
	5. 'To look after parents in old age'.	5	2	1	8 (15.1)
	6. Others*	—	4	—	4 (7.5)
Social					21 (39.6)
	1. Fear of survival	—	10	—	10 (18.9)
	2. 'Family name' continues	5	1	—	6 (11.3)
	3. 'No one helps if one is alone'	—	3	—	3 (5.7)
	4 'Mother of one son is blind from one eye'	—	2	—	2 (3.8)
Others					
	1. Could not specify any reason	1	2	—	3
	2. Does not apply (DNA)				4
	3. No definite answer to number of sons (DNK)				8
	4. God knows				9

* Others include : 'One son cannot take care of the property well' (1), 'One brother can help the other' (1), 'If one serves in the army other can work in the fields' (2).

† Percentages are calculated out of 53, excluding DNA, DNK and "God knows". Some respondents gave multiple responses.

economic dependence in our social system may be the main causes of son preference among our rural communities. About 13% of the respondents said that their having a particular number of son (s) was in God's hands and hence they did not specify the number of son (s) that they wanted their son (s) to have. Wanting to have two sons because of the fear that if one of them died there would be no surviving son left, is the single most important reason (18.9%) for wanting to have two sons.

"Agriculture needs at least two sons" was the reply given by 13.2% of the respondents On an average, a respondent gave more than one (1.1) different responses for wanting to have a particular number of sons. This is also indicated in Table 1 where most of the respondents were found to express a desire for two sons.

Table 2 shows a distribution of the respondents according to the reasons given by them for having a particular number of daughter (s). Whereas the reasons for wanting to have a particular number of son (s) were largely economic, the reasons for wanting to have daughter (s) were predominantly social (74.32%). Among the latter, the most important was "increase in kin-ship," expressed by 17.8%. Approximately 14.9% of the respondents thought it good to have a 'mixed family, 11.4% of the respondents gave no specific answer, while 12.8 thought it "to be in God's hands." Only two respondents were not in favour of having any daughters in a family. On an average, each respondent gave 1.4 different answers for wanting a particular number of daughter(s). Table 2 also reveals that most of the respondents think that there should be one daughter in a family in addition to the expressed desire for a particular number of son (s).

Discussion

The present analysis shows the following trends in family size:

a. There is a trend favouring a small family size among the Panchayat members in rural Punjab.

b. A majority of those interviewed wish to have two sons in addition to a particular number of daughter(s).

c. A majority of the respondents also wish to have one daughter in the family besides the expressed desire for a particular number of son (s).

d. The concept of "ideal family composition" is more important and predominant than that of "ideal family size."

The findings of this study raise certain questions which need to be considered by population planners. Our experience is that people in this area do not have any perception regarding "ideal family

TABLE 2

Reasons for wanting to have a particular number of daughter(s)

Reasons	Responses	Number of daughters wanted			Percentage
		0	1	2	†
Economic					4(5.33)
	1. 'More daughters means more expenditure'	—	2	—	2(2.7)
	2. 'Daughter is needed for married with pomp and show'	—	2	—	2(2.7)
Social					55 (73.33)
	1. 'Daughters expand relationships'	—	11	2	13 (17.3)
	2. 'Daughter is needed for procreation'	—	9	—	9 (12.0)
	3. 'People get an opportunity for "Kanya Dan"'	—	6	1	7(9.3)
	4. 'If there are no daughters at home, people do not look respectfully at other women'	—	6	1	7(9.3)
	5. 'If there are no daughters with whom men would marry ?'	—	4	1	5(6.7)
	6. 'Family goes on expanding'	—	2	1	3(4.0)
	7. 'Daughters help in domestic work'		2	1	3(4.0)
	8. 'Daughters look after the parents well'	—	2	1	3(4.0)
	9. 'One does not realise the responsibilities of a family without a daughter'	—	2	—	2(2.7)
	10. Others*	—	3	—	3(4.0)
Others	1. It is good to have a 'mixed' family	—	9	2	11 (14.7)
	2. Reasons not specified	2	3	—	5(6.7)
	3. Does not apply (DNA)				4
	4. No definite answer (DNK)				8
	5. Only God knows				9

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* Others include : 'In case of any difficulty daughter's relation might help' (1).
'If there are no daughters at home people do not treat their wives and daughters-in-law well' (1).
'Brothers and sister can help each other' (1).

† Percentages are calculated out of 75 excluding DNA, DNK and "only God knows". Some of the respondents gave multiple answers.

size" but they have some sort of an opinion regarding "ideal family composition." An overwhelming majority of our respondents thought that a family should consist of two sons and one daughter. This was primarily due to the interaction of cultural beliefs, social customs, economic needs and occupational necessities. Though the common answer to the question on family size was 2-3 children (to debate on whether their answer to this question was a result of our propaganda or it really reflected their opinion, is off the point), a probe for its composition immediately brought an answer preferring two sons and one daughter. Though the total of two sons and one daughter is three, the probability of having two sons and one daughter out of a total of three children is not very high. This would certainly result in having more than three children The question it raises is whether or not people would accept methods of family limitation before attaining the "desired family composition". Even if they did attain the "ideal family composition", would they accept methods for controlling their fertility after that? A report written by Robert Repetto[4] on the basis of surveys carried out in Delhi and Lucknow concludes ". . . the suggested conclusion is that success or failure in achieving the desired family composition has little if any influence on subsequent fertility of these populations". He further claims that "... couples who manage to ensure the survival of several sons go on having a relatively large number of additional children instead of limiting subsequent fertility". Even if, inspite of this contradictory evidence, we for a moment accept that couples would limit their further fertility after attaining the desired family composition, is it worth our while to utilize our resources in only trying to persuade people to have two or three children? Or would it be better if efforts are made to change the values that people attach to the sex of children? Or provide them with alternatives in which economic needs and occupational necessities do not warrant two sons? Our culture is a peculiar phenomenon of interacting social forces. Some couples have large families in the hope of having a son while others prefer large families because they want to have more and more sons. How could we ever resolve this paradoxical situation?

Demographers have predicted that even if the birth rate is reduced to half by 1983, because of the current age structure in the developing countries, the population would continue to increase at the rate of two per cent per year. The current age distribution in developing countries is heavily weighted with women who are now in the childbearing ages and who would enter the childbearing ages over the next two decades. With the present efforts, could we at all be able to reduce our birth rate by half by 1983?

The single most important reason for wanting to have two sons is the fear that the children may not survive. If the "child survival hypothesis" is correct, which this study also indicates, then, to be able to have two living sons, people might subconsciously go in for more. (At the moment, there is no evidence to prove this either way). Would people in that situation be satisfied after having had two sons and one daughter or would they have more in order to keep some in the "reservoir" for eventualities? Will people accept family planning if they are not assured of the survival of their children? (This area still lacks empirical evidence). Can the existing infra-structure for the delivery of health services in rural areas provide this assurance? If not, could we wait for our health services to develop to a level where people could be assured of the survival of their children?

The developed countries are increasingly getting concerned about the population explosion in developing countries as they claim that it is "draining out their resources". The people in developed countries have started talking about "the life boat ethics" and "every country for itself or else we all shall perish". What does all this mean? Do we wait till the situation changes at its present rate of change (the existing efforts have not yeilded substantial results) and live on foreign aid or do we take some drastic steps, including coercion through the power of law, to influence the fertility behaviour of our masses in the desired manner?

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CHARACTERISTICS OF WOMEN SEEKING MEDICAL TERMINATION OF PREGNANCY

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Introduction

With the acceptance of the recommendation made by the Shantilal Shah Committee regarding the liberalisation of abortions and the resultant emergence of the Medical Termination of Pregnancy Act, 1971, numerous mixed reactions were evoked from various State administrators, political leaders, medical men and the community at large, some favouring and others disfavouring the decision. A majority of the people favouring the decision felt that married women who visit family planning clinics regularly for contraceptive services for either limiting or spacing births often find that they have failed to prevent a pregnancy despite the regular use of contraceptives. Women experiencing anguish caused by such an unwanted pregnancy genuinely deserve the help of the law. This law therefore would help to restore the confidence of people practising family planning.

A number of people disfavouring the legislation are concerned that this liberalisation might be taken as yet another method for family limitation with the result that the same group of females would seek the help of the MTP Act repeatedly. To combat this they suggested the need for stressing the sterilisation operation for the husband or wife following a MTP. This argument, however, pre-supposes the fact that couples already posessing the desired number of children would mainly seek a MTP, which may or may not entirely hold good. The belief that the same group of women would repeatedly come for an induced abortion would, however, be an interesting point to investigate. Additional information regarding how many of these couples who came for a MTP, would accept permanent methods of family planning also needs investigation.

Objectives

After the liberalisation of abortions in April 1972, pregnant women came forward to family planning centres, hospitals and to individual medical practitioners for abortions. Many also approached the Family Planning Training and Research Centre (FPTRC) for this purpose, although the Centre does not provide this service. All these women were referred to suitable hospitals. However, prior to this, the various socio-economic and other factors, the stage of pregnancy at which they came for an abortion, and the percentage seeking a MTP following contraceptive failure, were recorded. In addition, they were followed up after the operation to find out the proportion which subsequently accepted a permanent family planning method like tubal ligation, or the number whose husbands accepted a vasectomy. Information on previous abortions if any, was also elicited from these women to assess the incidence of repeated abortions.

Methodology

The data for the study was collected through a pre-tested questionnaire administered to all pregnant women visiting the FPTRC, during a period of seven months from 1st September 1973 to 31st March 1974, for advice on MTP. It included general information like age, religion, occupation, mother-tongue and educational status of the couple, marital history of the couple, their knowledge and practice of family planning methods, the menstrual and obstetric history of the woman, the reasons for wanting a MTP, and source of reference. It also sought information following the abortion, where the woman was referred for the MTP and the interviewee's impressions of the women.

All the women were married and were staying with their husbands. When both the husband and the wife came together with a request for abortion, both were interviewed together. At times, either the husband or the wife came alone, and was interviewed individually. During the interview, attempts were made to motivate them to accept sterilisation or use a family planning method after the abortion and their reaction was noted. The person was then referred to some other agency performing abortions or to a private maternity home of the woman's choice, based on socio-economic grounds or the distance of the place of reference from the woman's residence. The women were instructed to report as to whether and where they went for the operation, whether or not post-abortion sterilisation was done in deserving cases, whether or not any other family planning method was accepted, whether there were any complications after the operation, and any other information relevant to the follow-up of the case.

A total of 103 cases were studied, of which three proformae were discarded for want of complete information. The total number of interviewees was hundred and therefore the figures in each column also represent the percentages.

Results

In 60% of the cases the women came alone asking for an abortion, while in 25% of the cases both the husband and wife approached the Centre for advice. Only 15% of the husbands came for MTP advice without their wives.

Age : Most of the couples who visited the Centre asking for an abortion belonged to the 25-30 age group (29%husbands, 33% wives). While 7% and 29% of husbands and wives respectively were between 20-25 years of age, 41% and 35% respectively were between 30-40. As many as 23% of the husbands were over 40 while this age group included only 3% of the women. There were no couples below the age of 20 years. It was found that the median age of the husbands was 32.54 years while that of the wives was 28.39 years.

Occupation : Out of the hundred husbands, two were unemployed while a majority of wives (82) were not employed in any economic activity outside the house. Nine men and 5 women were unskilled workers such as, peons, cobblers and workers, 41 men and one woman were skilled workers like electricians, mechanics, wiremen, tailors and small shopkeepers. Thirty-seven men and 12 women were engaged in either private or Government services. The remaining 11 men were businessmen and were earning more than Rs. 700 per month.

Income: Most of the interviewees belonged to the lower and lower middle income groups, i.e., in the income groups of less than Rs. 300/- (55%) and Rs. 301-500 (26%). While one person's monthly income was not recorded, seven, five and six persons fell in the Rs. 501-700, Rs. 701-1,000 and over Rs. 1,000 categories respectively. Eighty-two females being only housewives did not earn at all. Thirteen earned less than Rs. 300/- per month and only five had a monthly salary of Rs. 301-500.

Mother-tongue & religion : The largest proportion (52%) of the cases was Gujarati-speaking followed by Marathi-speaking (34%) and Hindi-speaking (5%). Nine couples spoke other languages such as

Urdu, Telugu, Malayalam, etc. Seventy-nine per cent of the sample was Hindu, 14% were Muslims, 1% Christian, whereas six were from other religious faiths like Buddhism, Jainism, Sikhism etc.

Literacy: The literacy rate of the couples who came to this Centre asking for an abortion was high. Only one husband and eight wives were illiterate. The majority of the couples had passed the S.S.C. Examination (34% husbands and 29% wives), about 42% of the husbands and 51% of the wives had passed primary and/or middle school, 34% and 29% respectively had had high school education, 7% each were undergraduates, while 16% and 5% respectively had graduated or had had postgraduate education.

Marital status: Of the hundred couples, four were recently married and five had been married for over twenty years. Thirty six had experienced one to five years of married life; 27 six to ten years; twelve 11-15 years; and sixteen 16-20 years. The inference is that more than fifty per cent of the couples had been married only 10 years ago and the women belonged to a comparatively younger age group. As many as 48% lived in joint families while the rest (52%) lived in nuclear families.

Knowledge of family planning: The majority of the cases (83%) had knowledge regarding one or the other type of family planning method. Seventy-one of the 83 had some knowledge of family planning and had used one or the other of the methods regularly (18%) or irregularly (35%); the remaining 18% had discontinued contraception. Twenty-nine per cent had never used any method either for spacing or for limiting births even though 12 of these couples had some knowledge of some method. Seventeen per cent had no knowledge of any family planning method.

Practice of family planning:

TABLE 1

Family planning methods used

Method	No. of acceptors
Condoms	57
Diaphragm	2
Jelly alone	1
IUD	12
Oral Contraceptives	20
Others	4
Total	96

Table 1 gives an idea of the different family planning methods used by these women. It shows that more than half (57%) used the condom. In this case the total number of frequencies is 96 while earlier only 71 were stated to be using a family planning method. This difference arises because from among these 71, some used more than one method at a time. It may be noted that 20% of the women using oral contraceptives, a method having almost cent per cent success also got pregnant, probably due to irregular use of the pill.

TABLE 2

Type of method used by regular users

Type	No of acceptors
Nirodh only	8
Nirodh and IUD	2
IUD	2
Oral Contraceptives	4
Jelly alone	1
Withdrawal	1
Total	18

The family planning methods used by the regular users have been listed in Table 2. Among the contraceptive failures were four pill cases and two intrauterine device cases. A majority of the couples were using Nirodh alone or Nirodh with IUD. It is evident that most of the women who sought advice on MTP had had four or less children (93%) which is definitely lower than the normal average of an Indian mother (5.6 children per woman). This stresses the fact that couples or women seeking advice on MTP constitute a highly motivated group for family planning purposes. It is interesting to note that five per cent had not had any pregnancies, 24% had one child, 35%, the majority, had two children while 17% and 12% had three and four children respectively.

Information regarding the number of pregnancies, still births and abortions experienced by these women, was collected to find out if these women represented a group of females who habitually came for an abortion. As is evident from Table 3 this does not seem to be so from the past history of still births, spontaneous and induced abortions. Five women had had no previous pregnancies at all. A few (4 women) had one stillbirth each, whereas 96 women had never experienced a spontaneous abortion (i.e, 15 had one each and 3 had

Pregnancies, still births and abortions

TABLE 3

Number of pregnancies, still births and abortions

Still births		Abortions			
		Spontaneous abortions		Induced abortions	
No. of still births	No of cases	No. of still births	No. of cases	No of induced abortions	No. of cases
		0	82		
0	96	1	15	0	92
1	4	2	3	1	8
2+	—	3+	—	2+	—
Total	100		100		100

two each). The maximum number of induced abortions reported was one. One important finding was that nearly 90% of the women had never had any stillbirths or abortions.

Number of living children: Five couples who came for an abortion did not have a single living child. Twenty-four had only one and the largest majority (39) had two living children and did not want a third—either not at all or at least not in the near future. The number of cases who came for the operation after the fifth child was the lowest (2). As many as 17, 10 and 3 had three, four and over six children each respectively. It could be said with some confidence that awareness, of family planning was greater among those who had two or three children.

TABLE 4

Sex-wise distribution of living children

No. of male children	No. of couples	No. of female children	No. of couples
0	26	0	28
1	42	1	47
2	25	2	15
3	6	3	9
4	0	4	1
5	1	5	0
6+	0	6+	0
Total	100		100

Table 4 gives a distribution of male and female children among the hundred couples. Twenty-six couples had no living male child while 28 had no living female child. The average number of living children per couple worked out to 2.25 whereas it is 5.6 for the average Indian family.

Stage of pregnancy: Of the 100 cases interviewed, four had lactational amenorrhoea, 2 visited the Centre soon after conception and 2 visited one month after the expected menstrual period. Only three women had come at a later stage of pregnancy, i.e. about three months. Thus, the majority of the women had come for an abortion between two to three months of conception. (67 between 1-2 months and 22 between 2-3 months of pregnancy).

Reason(s) for wanting an abortion: At the time of interview all the hundred cases stated one or more reasons for wanting to terminate their pregnancy A large number of women (75) asked for it for social reasons such as they were studying or had recently got married and wanted to start a family two or three years later, had no proper accommodation, or, that they already had three or more children and did not want any more Thirty-nine said that their economic condition was very bad and they could not afford to feed another child. Eleven cases requested for it on medical grounds, like poor health of the mother, repeated pregnancies and diseases such as tuberculosis, cardiovascular diseases, respiratory diseases, etc. Only one woman stated that her husband was unemployed and of irresponsible behaviour. The total number of reasons given was 126 as some stated more than one reason. There were five primiparas seeking abortions. The reasons given for medical termination of pregnancy by this group were : (i) Suffering from tuberculosis and proper accommodation not available ; (ii) early marriage, or woman studying in college ; (iii) husband unemployed ; (iv) newly married but did not want a child at present ; (v) nobody to look after the child at home as both are working.

Previous knowledge of abortion: Among the 100 women interviewed only 25 said that they knew what is meant by an abortion while the rest were completely ignorant about it In spite of their ignorance, however, the majority of the couples sought medical advice before the completion of 12 weeks of pregnancy.

Use of previous methods of abortion: Fourteen of the 100 women had resorted to an abortion before they came to the Centre. About 14 women said that their private doctors had prescribed some medicines in the form of injections or tablets and some had also been recommended a curettage. The others had not tried any method.

Out of the hundred cases interviewed, 56 were advised to accept a sterilisation following the abortion. Forty-four women who gave reasons, such as, the absence of previous children or 'only one child and poor health of the woman' were not advised to undergo the operation. However, of the 56 cases, only 30 women and the husband of one other woman were willing to undergo the operation. When the Project was planned it was decided that as a follow-up, each woman would be requested to visit the Centre again or inform it by post as to the decision taken by the couple, within two months of his or her visit.

Follow-up: Of the 100 cases interviewed, five persons made it clear that they neither wanted the workers to write to them or visit their homes for follow-up as their in-laws or elders were not aware of their visit to the Centre. They, however, promised to come themselves and inform the Centre about their decision, but for some reason(s) they neither came nor wrote to us The workers could not do anything with regard to the follow-up of these cases as their instructions were, "No letter/home-visits." Of the remaining 95 cases, 40 persons—either the husband or the wife or a relation of the patient came to the Centre, six informed us by post and one person by telephone. Letters were sent to the rest (56), with a reminder followed two months later, to 29. Eighteen persons responded to the letters and reminders. Of those who did not respond, 37 were paid visits at their respective houses by the workers. However, no information regarding 11 cases was available and 11 cases could not be contacted. The follow-up showed that only 39 of the 100 women underwent medical termination of pregnancy. Of these, six did not adopt any family planning method, 11 had an abortion followed by sterilisation, one got herself sterilised after her delivery, and 21 women were using a non-terminal family planning method. Also, 15 women decided to continue with the pregnancy and use some method or undergo sterilisation after delivery. Seventeen women who did not get their periods and were given Duogynon menstruated indicating that they were not pregnant even though they had missed their periods and were overdue at the time of their visit to the Centre. Of these, nine used a method, five did not use any and three said that they would use a method. Of the remaining 17 cases no information was available inspite of home-visits as some had gone out of Bombay, some had left Bombay for good, and some had changed their places of residence and not left their addresses behind, or had instructed that no follow-up should be done. In 10 cases thus, no follow-up was done.

Methods used after abortion : Of the 73 cases followed-up, twelve had taken permanent methods of sterilisation and twenty-one (45.2%) had opted for the above temporary methods of contraception. Four were using Nirodh, eleven women had taken the IUD, five were on oral contraceptives and one couple resorted to coitus interruptus. There were seventeen cases of delayed menstruation. Out of these, four couples were using Nirodh, two women were on the pill, two were IUD users and one couple was using the withdrawal method. The remaining three women in this group stated that they would use some method at a later date. Out of the 12 cases who underwent sterilisation following MTP, 11 have given economic as well as social reasons for wanting an abortion. Their husbands' monthly income was less than Rs. 300/- and they felt that to take on the additional responsibility of one more child was not possible. One woman asked for a termination on the grounds of ill health. No woman came for an abortion and sterilisation purely on medical grounds. In one case the reason was not recorded.

Age and number of living children of sterilisation acceptors: The majority of the 12 women who accepted sterilisation i e. 10, had 3 or less living children. The break-up shows that one aged 30-34 had one child, 5 had two living children each and they were distributed among the age groups of 20-24 years (1), 25-29 years (1), 30-34 years (1) and two in the age group 35-39 years. Four women, two each from the age groups of 30-34 and 35-39 had 3 living children, and only two women, one each from the 25-29 and 30-34 age groups respectively had four living children.

Age and previous abortions (if any)

Of the 100 cases, a large majority (74) had had no previous abortions, while 23 had one each, 3 had two and no one had more than

TABLE 5

Age and previous abortions (if any)

Number of abortions	Age group (years)						
	Below 20	20-24	25-29	30-34	35-39	40+	Total
None	—	26	22	17	7	2	74
One	—	4	8	7	3	1	23
Two	—	—	2	1	—	—	3
Three	—	—	—	—	—	—	—
Four	—	—	—	—	—	—	—
Total	—	30	32	25	10	3	100

two abortions prior to their visit to this Centre (Table 5). Of the 12 cases who underwent sterilisation following MTP, five women had not had a previous abortion (age group 25-29, 1 woman; 30-34, 2 women, and 35-39, 2 women), another five women had had only one (20-24 years one; 30-34, 2; and 35-39, 2) and two women aged 25-29 and 35-39 years had had two. As such, we can safely conclude that the majority (10 or 83.3%) were not cases of repeated abortions.

Comments and Conclusions

The number of respondents in this study is not sufficiently large for drawing any defiinite conclusions but nevertheless, the fact that among this group of 100 women, 32 of the 38 who underwent abortion accepted one or the other method of family planning stresses the point that couples seeking advice regarding MTP are a self-motivated group and need to be encouraged to come forward and later accept a method, preferably sterilisation. It also brings out the fact that the people in Bombay are aware of the legalisation of abortion and seek such advice at the time of need. Almost all the 100 couples who visited the Centre did so before the pregnancy went beyond 12 weeks. This could be because they had some idea or awareness of the complications arising out of medical termination in the later stages of pregnancy, though no details have been collected in that respect. It was observed that 18% of the couples were regularly using one or the other family planning method and had come seeking advice because of contraceptive failure This need is acute and personal. All the females visiting our Centre were married women who in most cases came along with their husbands. Most of them were young and below 35 years of age (males 60%; females 83%), which shows that they still had ten or more reproductive years which were covered by the various family planning methods accepted by some of them.

The acceptance of abortion as a method for limiting families depended to a large extent on the socio-economic condition of the couple. The majority of the acceptors (about 90%) said that "poor socio-economic back-ground" was the reason for wanting an abortion. In the case of couples undergoing sterilisation after MTP all mentioned "socio-economic factors" as the reason, though most of them had three or less than three children only.

It is significant from the data collected that medical termination of pregnancy was not taken as a habitual method of family planning by these women Only 8% had had an induced abortion once before and 90% of the women had never had any still births or abortions before the present experience.

Another interesting finding was that most of the respondents

(81%) who came asking for an abortion, had had only three or less than three pregnancies and/or living children, and we can easily classify this group of women as a highly motivated group. The average number of children per couple was 2.25 which is much smaller than the all India average of 5.6 children per couple. Correct motivation of this group seeking MTP to adopt a method, preferably a terminal method, will go a long way to help the present national programme of population control.

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DETERMINANTS OF VALUES IN THE SMALL FAMILY NORM

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Sociological studies generally accentuate the demographic and socio-economic background of the individual in influencing him to behave in accordance with his attributes. The relationship between these factors and family size values provides a promising field of study to those interested in population problems and family planning. Family size values are deeply rooted in the system of social relationships and have powerful sanctions. These values are important determinants of fertility performance in the society and are responsible for bringing about changes in society, though gradually.

The importance of values which have a determining impact on the acceptance or rejection of an innovation can hardly be overemphasised. Since family planning demands changes in existing values with regard to family size and reproduction, value orientations of individuals which play a crucial role in decision-making for a certain number of children with a specific sex-ratio which people desire and idealize for themselves, have special significance for such a study of family size values. This study seeks to find out the demographic and socio-economic factors and the value orientations of individuals which influence family size and composition, with special reference to both acceptors* and non-acceptors* of family planning. The number of children that are desired and considered ideal in relation to the living ones, and the extent of preference for sons were among the family size values considered for the present study.

Sampling design

An urban demonstration area under the Regional Family Planning Training Centre, Lucknow, was selected for the study. This is one of the fifteen family welfare centres in the Corporation, each

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Data used in this analysis were collected by the author for his doctoral thesis on 'Value System and Family Planning in Lucknow City' which has been approved for the award of Ph D (Lucknow University)

* The term "acceptor" in the present context denotes a couple with either of the spouses practising one or the other method of family planning.

* The term "non-acceptor" indicates a case wherein neither of the spouses has ever used any method of family planning.

of which caters to a population of about 50,000.

A hundred and fifty acceptors of family planning were selected through the procedure of 'Stratified Random Sampling under Proportional Allocation' out of a total of 1,457 acceptors in this urban demonstration area. The same number of non-acceptors were also selected in proportion to the corresponding sample size of the acceptors in the same sectors. The study is thus based on a total sample of 300.

Results

Demographic and Socio-economic Correlates of Values Relating to Family Size

Table 1 sets out the correlation coefficients of the demographic and socio-economic values relating to family size of both acceptors and non-acceptors.

A positive relationship was observed between the number of living children and the ages of both the spouses of both acceptor and non-acceptor couples. This suggests that the number of living children increases with age, which is what one actually finds, in that with advancing age there is an absence of a conscious and deliberate attempt to check natural fertility. In the case of acceptors, one may argue against this finding on the grounds that the acceptors may have planned their families by using some family planning method. The voluntary nature of the family planning programme which gives freedom to couples to use family planning methods to space or restrict births after a certain number of 'desired' children, provides an answer to the above argument. The possibility of discontinuing an accepted method can also not be altogether ruled out. However, younger rather than older non-acceptor couples, tended to favour fewer children for both 'desired' and 'ideal' family sizes as is shown by the negative correlations. A similar relationship of 'desired' and 'ideal' number of children with the husbands' age and the desired number of children with the wives' age was visualised in the case of the acceptors. This relationship holds good partly because of the tendency of younger couples to rationalize 'desired' and 'ideal' family size in view of the existing family size, irrespective of the fact that they pass through the child-bearing age when there is a potential for further increase in family size.

Education largely determines, rather contributes, to one's social status and can engender aspirations of having only that particular number of children which the couple can bring up properly. A significant impact of education was evident from the present results in that it consistently encouraged non-acceptor husbands and wives

TABLE 1

Demographic and socio-economic correlates of values relating to family size

Variables	Acceptors (N=150)				Non-acceptors (N=150)			
	No. of living children	No. of "desired" children	Ideal children	Son yearning	No of living children	children No. of desired	Ideal children	Son yearning
1. *Age*								
Husband	0.60**	–0.35**	–0.17*	–0.06	0.62**	–0.22**	–0.26**	–0.09
Wife	0.58**	–0.34**	–0.10	–0 02	0.63**	–0.24**	–0.26**	–0.10
2. *Education*								
Husband	–0.28**	0.28**	0.20*	0.29**	–0 52**	0 43**	0.44**	0.29**
Wife	–0.18*	0.19*	0.03	0.20*	–0.34**	0 26**	0.18*	0.20*
3. *Income*								
of couple	0.01	0.12	–0.11	0.01	–0.15	0.19*	0.18*	0.15
of family	–0.19*	0.22**	0.03	0.04	–0.20*	0.20*	0.19*	0.08
4. *Family type*	0.28**	–0.17*	–0.15	–0.09	0.17*	–0.14	–0.07	–0.07
5. *Privacy*	–0.34**	0.24**	0.17*	0.05	–0.30**	0.27**	0.20*	.0.23**

* Value of r = 0.16, significant at 5% level.
** Value of r = 0.21, significant at 1% level.

to opt for a smaller number of children with regard to both 'desired' and 'ideal' family size. Education also tended to lessen their yearning for a son. Education had a similar impact on family planning acceptors. The higher the educational level of the spouses, the smaller was the number of living children they had.

The income factor influenced both acceptors and non-acceptors in the same fashion. A positive correlation was noted between the couple's income or the family's income and the non-acceptors' values in favour of a smaller number of children for 'desired' as well as 'ideal' family size. Higher family income among the acceptor group also seemed to influence the desire for fewer children. In general, income did not appear to be so influential a factor as education. This is true because well-to-do persons are apparently more unconcerned about the number of children they have because they have the means to support them and also because they need more hands to share their business or other responsibilities. Contrary to this, persons of higher educational status have a wider perspective and think of the pros and cons of having a certain number of children because of their enlightened and rational minds.

Family type and the availability of privacy within the house also affected the behaviour patterns of the spouses in general, and sexual and reproductive behaviour, in particular. In nuclear families, freedom from the interference of in-laws and more frequent chances of sexual activity, are likely to result in high fertility. The present study confirmed this assumption in that an increase in nuclear families consistently went with a larger number of children both among acceptors and non-acceptors. Similarly, an increase in nuclear families or the distintegrating joint family system among acceptors tended to augment the desire for larger numbers of children. Increasing privacy tended to minimise the desire for sexual intimacy, thereby contributing to low fertility as compared to the overcrowded slums where fecundity is generally found to be higher. Also, a fewer number of children for 'desired' and 'ideal' family size, along with a lower degree of preference for male children was positively related to privacy.

Values Relating to Family Size and Value Orientations (Correlates)

A negative correlation of values was observed with living children indicating a significant impact of free will and adventure for living children among acceptors, and of activism, free will, aspiration, adventure, individualism, modernism, optimism, conscientiousness, secularism and aestheticism among non-acceptors (Table 2). The couples' growing orientation in these values seemed to be in concert with a number of living children while diminishing orientation tended to be associated with larger sized families. A significant correlation of free will, aspiration, adventure, individualism, modernism and secularism indicated that these values are likely to influence the non-acceptors' orientation towards smaller 'desired' and 'ideal' family sizes, and also towards a lowered preference for sons. The influence of activism and optimism was also visible among non-acceptors, although these do not significantly correlate with a lesser desire for a son. Secularsim was related to the non-acceptors' desire for a smaller number of children. Materialism and revolutionism were the only two values which bore an almost negligible relationship with values pertaining to family size and composition. Increasing materialism appeared to increase the non-acceptors' desire for a larger number of children and conscientiousness for a smaller family size. This is probably a reflection on their easy-going life style. Thus, the desire for fewer children develops among the acceptors if they are oriented to revolutionism, activism, free will and adventure. A small idea family size also seemed to depend on the secular orientation of the acceptors. This secularism was positively related to lowered preference for sons among both acceptors and non-acceptors.

Conclusions

To sum up, education higher income and younger age, were dominant factors in raising the people's aspirations for valuing the smaller family norm. The findings concerning the influence of family typology are in conflict with the general view that nuclear families coupled with privacy discourage high fertility. These are, however, supported by the study of Nag[1] in West Bengal which is in agreement with the school of thought which Driver[2] ascribes to in that couples in nuclear family units feel free from interference of in-laws and other kin which allows them greater sexual intimacy.

The value orientations of the acceptors did not exert sufficient influence for creating value changes, in favour of smaller family sizes, as only a few correlations were found to be significant. However, their role in effecting such value changes to the extent that their correlations are found to be significant, cannot be denied.

In the case of non-acceptors, values for fewer children seemed to be correlated with activism, free will, aspiration, adventure, individualism, modernism, optimism, secularism and conscientiousness, and thus, it may be expected that their growing orientation to these values may strengthen their convictions in favour of family planning.

TABLE 2

Values relating to family size and value orientations (correlates)

Value orientations	Acceptors (N=150)				Non-acceptors (N=150)			
	No. of living children	No of desired children	Ideal children	Son yearning	No of living children	No. of desired children	Ideal children	Son yearning
1. Activism-Passivism	-0.09	0.22**	0.11	0.00	-0.53**	0.40**	0.34**	0.14
2. Free Will-Fatalism	-0.31**	0.21**	0.11	0.11	-0.47**	0.42**	0.32**	0.16*
3. Aspiration-Contentment	-0.08	0.09	0.05	0.07	-0.36**	0.29**	0.28**	0.21**
4. Adventure-Security	-0.18*	0.18*	-0.02	-0.02	-0.37**	0.30**	0.25**	0.23**
5. Individualism-Participation	-0.01	0.02	-0.13	0.13	-0.27**	0.18*	0.19*	0.18*
6. Modernism-Traditionalism	0.02	0.10	0.02	-0.03	-0.40**	0.34**	0.32**	0.18*
7. Optimism-Pessimism	0.07	0.04	0.11	0.03	-0.33**	0.11	0.24**	0.11
8 Revolutionism-Evolutionism	-0.08	0.17*	0.04	0.01	-0.13	0.02	0.08	0.08
9. Materialism-Spiritualism	0.04	0.08	-0.02	-0.05	0.01	-0.20*	-0.12	0.04
10. Conscientiousness	-0.01	0.13	0.05	-0.02	-0.16*	0.18*	0.09	0.03
11. Secularism-Religiosity	0.02	0.05	0.17*	0.16*	-0.23**	0.36**	0.36**	0.26**
12. Aestheticism	0.00	0.03	0.04	-0.02	-0.31**	0.14	0.06	-0.05

* Value of r = 0.16, significant at 5% level

** Value of r = 0.21, significant at 1% level.

Operationalization of these factors in determining family size and composition suggests organised efforts for the uplift of the socio-economic condition of the people, particularly in their early life in order to transmit to them, the values of small families. Besides, the couples' orientation on values like activism, free will, aspiration, adventure, individualism, modernism, optimism, secularism and conscientiousness need to be positively developed so as to strengthen their motivation for appreciating the small family norm in its real perspective.

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FERTILITY DIFFERENTIALS IN A RURAL COMMUNITY

DR. MOLLYKUTTY GEORGE
(Department of Statistics, University of Kerala)

Introduction

Studies on fertility have shown that family size differs among the different strata of a community.[1] It has also been observed that fertility differentials are not due to the fecundity status of the women alone. They are mainly due to differences in customs, attitudes and practices which prevail among the different social strata. Most studies on fertility in India and in western countries have substantiated these findings. However, Driver[2] reports some interesting exceptions on fertility differentials in Central India. That the differences are not similar for all communities and that the cause for the variations can be different between communities is evident from the investigations of Davis[3], Chandrasekhar[4], W.H.O.[5] and the United Nations[6]. The present paper is an attempt to investigate the differentials in fertility among different socio-economic and religious groups of a suburban community exposed to family planning propaganda.

Study Sample

Five hundred and thirty four married women between the ages of 20-39 were interviewed by the Department of Statistics, University of Kerala, with a view to studying their family growth patterns[7]. The women belonged to three selected villages on the outskirts of Trivandrum City, Kerala State, which were included in the target area of the Family Planning Communication and Action Research Project of the University of Kerala, and therefore had the privilege of being exposed to intensive family planning propaganda. The topics covered in the interview were pregnancy history, knowledge and practice of methods to avoid or to postpone pregnancies, attitude towards such practices and ideals, and desires and expectations concerning the number of children. This paper is based on the data collected in the course of the above survey.

Since the women in the sample were between 20 and 39 years, cohort fertility and not completed fertility, was considered for the study. Assuming that the biological potentialities are the same, the influence of education, income, occupation, residence, family type, religion and duration of marriage on fertility were specifically examined and have been reported in the following paragraphs.

Results

Birth place and fertility

The fertility data of the women—rural-born and urban born—classified into different age groups are given in Table 1. Rural-born women had higher levels of fertility than their urban born counterparts, in all the age groups. This is probably because it is customary for women in rural areas to get married at an early age.

Family type and fertility

Nuclear families had greater number of live births than extended families as is evident from Table 1. Similar trends of fertility behaviour have been reported in earlier studies by Agarwala[8] and Janardhan and Dutt[9].

TABLE 1

Average number of live births in relation to age and place of birth, family type and religion

	Average live births in age group (years)			
	20-24	25-29	30-34	35-39
Residence :				
Rural born	1.86	3.31	4.64	5.86
Urban born	1 36	2.53	3.72	5.05
Family type :				
Nuclear	1.88	3.54	4.87	5.96
Extended	1.77	2.97	3.78	4.67
Religion :				
Nairs	1.63	3.14	4.40	5.11
Ezhavas	1.58	3.26	4.45	6.29
Other Hindus	2.15	3.59	4.68	7.16
Christians	2.09	3.42	4.36	4.52
Muslims	*	3.00	6.00	8.00

* There is only one member and she has had no live birth.

Religion and fertility

The data on fertility in relation to age and religion which is also presented in Table 1, do not follow any definite pattern. Since there were only six Muslims in the sample, no definite conclusions could be arrived at. Christians recorded higher fertility than Nairs and Ezhavas in the younger age groups, while the reverse was observed with higher age groups. Between Ezhavas and Nairs, Ezhavas recorded higher fertility in the age range studied except in the youngest age group, 20-24 years. One conclusive observation was that the category of 'Other Hindus', which mainly consisted of scheduled castes, registered the highest fertility at all ages studied.

Occupation and fertility

From Table 2 it is clear that occupation and fertility are associated. Throughout the age range studied, officials of high rank had lower fertility than the other classes, probably due to their higher educational attainments. Higher fertility was recorded among housewives. A similar pattern of relationship between occupation and fertility was reported in the Mysore Population Study[6], where the average number of births was systematically lower for gainfully occupied women than for women who mainly performed household duties.

Income and fertility

The average number of live births by monthly income and age is given in Table 2. In general, respondents from higher income groups had smaller families. It was particularly interesting to note that the average number of live births was greater in the inome group 101 to 150. A possible explanation could be that the poor because of their poverty and the rich people by virtue of their great expectations in life, may have resorted to some sort of family limitation, while the middle class people led the traditional way of life.

Education and fertility

It is generally believed that educational attainments affect the fertility rate of women and the lower the educational attainments the higher will be the number of children they bear. Table 2 gives the number of live births in relation to education and age. A strong inverse relationship was found between education and the number of live births in general. This trend was exhibited irrespective of age except in the case of women aged 30-37, who had primary and secondary education. The number of live births was much lower in college-educated women. This phenomenon may be due to the fact

TABLE 2

Average number of live births in relation to age and educational status, occupation and monthly income

	Age group (years)			
	20-24	25-29	30-34	35-39
Educational level :				
Illiterate	2.25	3.81	4.72	5.57
Primary	1.89	3.29	4.07	6.04
Secondary	1.78	3.05	5.04	6.05
High school	1.35	2.50	4.50	4.00
College	1.00	1.75	2.44	3.83
Occupation :				
Officials of high rank	1.00	2.20	2.91	4.00
Semiskilled & unskilled	2.45	3.17	4.35	4.71
Housewife	1.77	3.28	4.66	6.03
Income in Rupees :				
Less than 50	1.70	3.46	4.42	6.03
51 to 100	1.85	3.10	4.56	5.57
101 to 150	2.40	3.71	5.47	6.75
151 to 200	1.50	3.00	4.50	5.89
201 to 300	—	1.00	2.86	5.50
More than 300	2.00	2.00	2.80	3.80

that with increasing literacy, the woman learns to realise the importance of limiting her family. Also, as the educational level rises, the age at marriage correspondingly goes up and consequently; the duration of marriage is shortened. We can see from Table 3 that women who have been married for longer periods, have larger families. Similar relationships between education and fertility have been reported by Driver[2] and Agarwala[8].

Conclusion

From the analysis of the above variables it is pertinent to conclude that there was a significant difference in fertility patterns

TABLE 3

Average number of live births in relation to duration of marriage and age

Duration of marriage (years)	Age group (years)			
	20-24	25-29	30-34	35-39
Less than 5	0.93	1 05	2 00	1 00
5 to 9	2.58	3.01	2.56	2.80
10 to 14	3.00	3.95	4.07	4.08
15 to 19		5.00	5.23	5.74
Greater than 20			6.33	6.50

among different socio-economic groups. An inverse relationship between fertility and education was observed. Women in extended families and urban-born women had fewer children than those in nuclear families or rural-born women. Religion also exerted its influence on fertility, but varied among the different age groups. The group 'Other Hindus' which consisted predominantly of scheduled castes, registered the highest fertility. Fertility was further influenced by occupation and income in that employed women and those from higher income groups had smaller families. These differences in fertility are in general very similar to those found among many other Indian sub-groups.

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UTILITY OF MALE AND FEMALE INVESTIGATORS IN SURVEYS RELATED TO FERTILITY AND FAMILY PLANNING–A PILOT STUDY*

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This pilot study is directed towards investigating objectively the relative utility of male and female investigators in surveys on fertility and family planning. The need for such a study stems from the feeling in some quarters that the reliability of the information on fertility and family planning–attitude and practice—collected by male investigators after contacting the husbands is less than that collected by female investigators after contacting the wives.

The study covered 8 villages and 4 urban blocks of Patna District, Bihar, India. Although selected on the basis of convenience of field work, the population in the selected villages and urban blocks represented the socio-economic variations obtaining in Indian society. The findings are not likely to be very different from the conditions prevailing in the general populaton of the State of Bihar

Sample, Field Work and Data

Samples of 48 and 24 households were respectively chosen from each selected village and urban block. To accomplish this, a list of households with at least one ever married female below the age of 50 years was compiled. The selection of sample units was effected on a circular systematic basis with a random start in each case. The selected households were numbered serially and were then divided into two halves. The households with odd numbers constituted one sample which was visited by male investigators and those with even numbers formed the second sample that was surveyed by female investigators. The two samples will respectively be referred to as male and female samples in our discussion. Male and female investigators were respectively required to interview the husbands and wives of selected households.

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* This work was at the Demographic Research Centre, Patna University, Patna, India, and had no connection with author's present assignment with the United Nations. The detailed report is available in mimeographed form

At a later stage, a provision was made for an overlapping enquiry of 25 per cent of the selected households from each village and urban block. Selection was made following a simple random scheme. Male investigators interviewed the husband of an eligible couple in the female sample and vice versa.

The field-work extended from April to June 1973. The selected villages and urban blocks together contained 2,259 households (1,162 in villages and 1,097 in urban blocks) of which 1,548 (68.52%) contained at least one ever married female aged less than 50 years (eligible female). The respective percentages of eligible to total households in rural and urban areas were 82.35 and 53.87. The average number of eligible females per eligible household in male and female samples were 1.26 and 1 23 females, respectively. The respective contact rates for male and female investigators were 84.78% and 96.67%. The chief reason for the differential in contact rates lies in the mobility of the respondents. Male respondents being more mobile could not be contacted by male investigators in a large number of cases In such cases, an informant who was invariably the member of the household, supplied the demographic particulars of the couple and the household. No information on family planning—attitude and practice—could be procured in respect of absent respondents. It appears, therefore, that if only male investigators are employed in fertility and family planning surveys, there is a risk that they may miss a substantial proportion of actual respondents.

The data were collected by male and female investigators belonging respectively to the National Sample Survey Organisation (NSSO) of India and the Demographic Research Centre (DRC), Patna. Supervision and checking was done jointly by senior officers of the Department of Family Planning, Ministry of Health and Family Planning, Government of India, the NSSO and the DRC. Every possible precaution was taken to ensure the reliability and accuracy of the information collected in the survey. Male and female samples respectively covered 302 and 289 respondents.

Findings from Male and Female Samples

Male and female samples are, by their nature, expected to yield a somewhat similar estimate of the characteristics of the population from which the samples have been drawn. Any significant difference between the estimates may be taken to indicate (if it cannot be justified on other considerations) the possibility of some definite misstatement of the facts by the respondents in either one or both samples. Alternatively, it is an indication of the inherent difference between the types of investigators. A number of characteristics described below have been considered to examine the magnitude of the difference between the estimates obtained from the two samples.

Age Distribution of Eligible Females

Summary measures obtained from age-distributions in five year groups of eligible females in male and female samples are given below:

Measure	Male sample		Female sample
Mean	29.37	years	30 37
Standard deviation	8.72	"	8.39
Median	28.55	"	29.31
First Quatile	23.10	"	22 60
Third Quartile	36.85	"	35.33
Total No. of Obs.	301		281

The average age of eligible females obtained from the male sample is one year lower than that obtained from the female sample. The difference, however, is statistically insignificant at a 5 per cent level of probability and therefore the two estimates may be considered to refer to the same population. The spreads of the distributions around the mean in both the samples are similar. The partition values also indicate the similarity of the age distributions.

Marital Status and Age at Effective Marriage

It is observed that male and female samples respectively showed the percentage of *currently married* to all ever married females as 98.01 and 98.93. The values are not much different.

The average ages at effective marriage of eligible females in male and female samples calculated from single year distributions are 15.52 and 15.78 years respectively. The corresponding standard deviations are 1.97 and 2.32 years. The difference between the average ages is statistically not significant. The percentages of eligible females with effective age at marriage in the 12-14, 15-19 and 20-24 years age-groups to total eligible females in male and female samples are 31.89, 63.80, 4.31 and 30.82, 61.65, 7.17 respectively. The average age at effective marriage for at least literate females in both the samples is about one year higher than that for illiterate females. The spread of the distribution of age at effective marriage, measured by standard deviation, in case of literate females in both the samples, is the same (2.3

years) whereas the same for illiterate females in the male sample (1.8 years), is somewhat lower than that in the female sample (2.2 years). It may be emphasized here that whatever differences between male and female samples in respect of age at effective marriage occur, are neglible and within the sampling error.

Literacy/Education of Eligible Females

The distributions of eligible females according to literacy/education in male and female samples presented in Table 1 broadly show a similar pattern. Slightly more than three-fourths of all eligible females in both samples are illiterate. Also, the percentage of eligible females with "Middle Level" education to all eligible female in each sample is higher than that with educational level below or above it. This is so probably because between the periods of primary and secondary education most of the girls get married and consequently discontinue schooling. In this context it may be pointed out that 'Middle' standard has been equated to eight years of successful schooling. In a socicty that experiences early age-patterns of marriage, it is just possible that by the time girls get married they might not have gone beyond secondary education and once they get married their education suffers a set-back.

TABLE 1

Distribution of eligible females according to literacy/education

Literacy/Education	Percentage	
	Male sample	Female sample
Illiterate	75.75	77.51
Below Primary	10.63	10.71
Primary	2.66	1.43
Middle	8.64	5.71
Secondary	1.66	3.57
Above Secondary	0.66	1.07
Total	100.00	100.00
Number of observations	301	280

Number of Children Ever Born and Surviving

The following is a summary of the distributions of eligible females according to the number of male and female children ever born and surviving at the time of the survey in specified samples.

	Male sample		Female sample	
	Mean	Standared deviation	Mean	Standared deviation
Male Children				
Ever Born	1.26	1.69	1.91	1.66
Surviving	1.26	1.28	1 44	1.32
Female Children				
Ever Born	1.63	1.57	1.58	1 43
Surviving	1.21	1.22	1.15	1.11

The estimates of the average number of children (male + female) ever born per eligible female in male and female samples are 3.39 and 3.49 respectively. The usual observation of more male than female births is maintained in both the samples. The difference between the average numbers of total children ever born to females in the two samples is statistically not significant at a 5 per cent level of probability.

The average number of children (male + femele) surviving at the time of survey per eligible female according to male and female samples were 2.47 and 2 59 respectively. The survival ratio for the total number of children ever born per eligible female in male and female samples are respectively 0 73 and 0.74

Number of Children Ever Born According to Age

The average number of children ever born per eligible female in broad age-groups as obtained from the two samples are given in Table 2. The number of observations involved in the calculation of averages are noted within parentheses.

TABLE 2

Average number of children ever born

Age-group (in years)	Male sample	Female sample
Less than 19	0.304 (46)	0.480 (25)
20–29	2.283 (120)	2.317 (126)
30–39	4.979 (95)	4 988 (84)
40–49	6.525 (40)	5.750 (44)

The above averages in age groups less than 19, 20-29 and 30-39 years are almost similar in both the samples. The difference between the averages in the age group 40-49 years is not statistically significant. It may thus be observed that both the sets of investigators are consistent in estimating the age-pattern and level of fertility in the population group under study.

Births and Infant Deaths During One Year Preceding the Date of Survey

Male and female investigators respectively reported 55 and 49 births during one year preceding the date of survey for the samples covered by them. The sizes of total population in respective samples were 1,448 and 1.541. Using this information, estimates of the crude birth rate from the male and female samples are respectively 38 and 32 births per 1,000 population. The difference is statistically not significant. Further, of the 55 and 49 births reported by male and female investigators respectively, 50 and 45 survived till the date of survey. Thus, the survival ratio for infants according to the male sample is 0 909 whereas the same according to the female sample is 0.918.

Pregnancy Status

The male and female samples respectively contained 295 and 278 eligible married females at the time of survey. Of these, 28 and 26 respectively have been reported to the pregnant. This implies that in the male and female samples respectively, 9.49 and 9.35 per cent of currently married eligible females were pregnant. The difference is statistically insignificant.

Ever-Use of Contraceptives

It has been pointed out earlier that in 15.23 per cent of the cases, male investigators could not contact the real male respondent. Hence, the information on practice of family planning methods is not available in respect of all these persons. Of the remaining, 12.11 per cent admitted to have ever-used a method of family planning. In the female sample, the corresponding percentage was 10.76. The details of the methods ever-used showed that in the male sample a large number of respondents used condoms whereas a similar pattern in respect of tubectomy emerged from the female sample. This pattern suggests the possibility that information on the use of sex selective methods of family planning may be influenced by the sex of the investigator. This implies that the incidence of family planning practice is likely to be underestimated if enumerators of only one sex are employed in fertility and family planning surveys.

Analysis of Overlapping Enquiries

The aim of the overlapping enquiries was to examine the consistency of the replies furnished by the husband to male investigators and by the wife to female investigators in response to the same set of questions. This could be possible in 127 cases which were from 113 households belonging to 25 per cent of the entire sample units and were selected randomly from each of the samples investigated by male and female enumerators. The enquiry was to cover 120 households but all those cases where replies from both the husband and wife were not available were left out of the analysis. Such cases were mainly of two types—(1) Male investigators could not contact the husband, or (2) Either set of investigators did not fill in the questionnaire because according to the records of the concerned set of investigators the wife was past the reproductive period whereas the other set of investigators classified her within the reproductive period. The present analysis covered selected items. The findings are given below.

Age at the Time of Survey

The distribution of differences between the ages of eligible females reported by male and female investigators is given in Table 3. A negative difference indicates that the age of the eligible female as reported by a male investigator is lower than that reported by a female investigator. The positive difference indicates the opposite. Table 1 suggests the following : for eligible females in the age group less than 30 and above 40 years, on the average, the ages reported by male investigators are slightly lower than those reported by female investigators. The reverse is true in the age group 30-40 years. The overall effect is such that the average age of eligible females as revealed by the male sample is 0.17 years higher than that shown by the female sample. The difference is not significantly different from zero. This suggests the possibility that the age distribution of eligible females as obtained by male investigators after contacting the husbands and that obtained by female investigators after contacting the wives will be very similar provided very broad age groups (preferably of 10-year interval) are adopted.

The Age at Effective Marriage

If the ages at first effective marriage are grouped in 10-year intervals, the average age at first effective marriage as reported by

TABLE 3

Distribution of the difference between the ages reported by male and female investigators in respect of eligible females

Difference between the ages reported by male and female investigators	Age of the eligible female at the time of the survey (in years)			Total
	Below 30	30-40	above 40	
-10	—	1	—	1
- 9	—	—	—	—
- 8	1	—	—	1
- 7	1	—	—	1
- 6	1	—	—	1
- 5	2	1	3	6
- 4	4	—	—	4
- 3	7	2	1	10
- 2	9	2	3	14
- 1	8	5	1	14
0	12	8	2	22
1	6	6	—	12
2	8	6	—	14
3	4	2	1	7
4	2	4	2	8
5	3	3	—	6
6	1	1	—	2
7	1	1	—	2
8	—	—	—	—
9	—	1	—	1
13	—	—	1	1
Total	70	43	14	127
Mean	- 0.342	1.093	- 0.071	0.173
Std. deviation	2.995	3.262	4.682	3.377

male investigators for 127 eligible females is observed to be 0.58 years less than that reported by female investigators. The standard deviation of the differences between the ages reported by the two sets of investigators is 2.26 years. The difference, though statistically significant from zero, can be assumed to be negligible particularly in a society where ages are mere guesses. The observed distribution of the difference is given below :

X:	–10,	–9,	–8,	–7,	–6,	–5,	–4,	–3,	–2,	–1,	0
F:	1,	–,	2,	–,	1,	2,	8,	9,	15,	25,	29
X:	1,	2,	3,	4,	5,	6,	7,	8,	9,	10	
F:	10,	14,	5,	3,	1,	1,	1,	–,	–,	–	

(Where X denotes the difference between the ages at first effective marriage reported by male and female investigators; and F denotes the number of eligible females).

Literacy and Educational Status

Table 4 presents the agreement chart for literacy/educational level of eligible females as reported by male and female investigators. It may be noted from this table that in 115 of 127 (90.55%) cases, both the sets of investigators agreed on the literacy status of the eligible females. Since most of the females (122 of 127) were either illiterate or had read upto middle standard, there is a possibility that husbands and wives might have disagreed on the question of literacy status of the eligible females. This is justified because literacy/educational status prior to matriculation level was mostly determined by the years of schooling and not by passing any public examination. Also, husbands might try to over-report the educational status of their wives. This may be noted to occur in 8 cases from Table 2. The marginal distributions are very much similar. This suggests that both the sets of investigators may report the same distribution of

TABLE 4

Agreement chart for literacy/educational level of eligible females

Literacy/educational level reported by female investigators	Literacy/educational level reported by male investigators						Total
	Illiterate	Literate	Primary	Middle	Secondary	Graduate	
Illiterate	89	3	—	1	—	—	93
Literate	2	12	2	1	—	—	17
Primary	—	1	—	1	—	—	2
Middle	—	—	1	9	—	—	10
Secondary	—	—	—	—	4	—	4
Graduate	—	—	—	—	—	1	1
Total	91	16	3	12	4	1	127

eligible females according to literacy/educational level attained by them.

Number of Children Ever Born and Surviving

The distributions of females according to number of children ever born and surviving as reported by male and female investigators are given in Table 5.

Male children ever born: In 108 cases both the sets of investigators reported the same number of male children ever born. Of the remaining 19, in ten cases, the number of male children ever born as reported by male investigators were higher than those reported by female investigators. The reverse is true in the remaining 9 cases. In spite of these differences, the average number of male children ever born per female as obtained from male enquiries (mean 1.937 standard deviation 1.625) is very close to that obtained from female enquiries (mean 1.897 and standard deviation 1.702). This difference is statistically not significant.

Revisits to 19 couples where there was a difference between the responses given by husbands and wives, revealed that in 6 cases male investigators were correct, in 9 cases female investigators were correct and in one case none was correct. In three cases, checking could not be done because the couples either did not cooperate or they had no definite idea of the number of male children ever born to them.

Male children surviving: The average number of male children surviving per female according to the information obtained by male investigators is 1.40. The standard deviation is 1.27. The corresponding values for the information collected by female investigators are 1.35 and 1.26 respectively. The difference between the averages is not significant. It may be noted from Table 5 that in 122 of 127 cases, the information obtained by both sets of investigators were similar. Only in 5 cases, there is disagreement. Of this, in 4 cases the number of surviving male children recorded by male investigators is greater than that recorded by female investigators. In one case the reverse is true.

In cases of disagreement, a subsequent checking revealed that in 2 cases female investigators were correct, in one case male investigators were correct, in one case none was correct and in one case no checking could be done because of non-cooperation of the respondent.

Female children ever born: Table 5 reveals that in 109 of 127 cases both sets of investigators reported the same numbers of female children ever born. In 10 cases, the number of female children ever born reported by male investigators was higher than that reported by female investigators. The reverse may be observed in 8 cases.

TABLE 5

Distribution of eligible females by children ever born and surviving at the time of survey as reported by male and female investigators

Number reported by female investigators	Number reported by male investigators								Total
	0	1	2	3	4	5	6	7	
				(a) Male Children Ever Born					
0	31	1	—	—	—	—	—	—	32
1	—	27	2	1	1	1	—	—	32
2	—	—	19	—	2	—	—	—	21
3	—	—	2	13	1	—	—	—	16
4	—	—	—	2	13	1	—	—	16
5	—	—	—	2	2	3	—	—	7
6	—	—	—	—	—	—	1	—	1
7	—	—	—	—	1	—	—	1	2
Total	31	28	23	18	20	5	1	1	127
				(b) Male Children Surviving					
0	37	—	1	—	—	—			38
1	—	40	1	1	1	—			43
2	—	—	21	—	—	—			21
3	—	—	—	15	—	—			15
4	—	—	—	1	8	—			9
5	—	—	—	—	—	1			1
Total	37	40	23	17	9	1			127
				(c) Female Children Ever Born					
0	32	—	—	—	—	—	—	—	32
1	—	26	1	—	—	—	—	—	27
2	—	3	20	4	—	1	—	—	28
3	—	—	2	18	3	1	—	—	24
4	—	—	—	2	6	—	—	—	8
5	—	—	—	—	1	5	—	—	6
6	—	—	—	—	—	—	—	—	—
7	—	—	—	—	—	—	—	2	2
Total	32	29	23	24	10	7	—	2	127
				(d) Female Children Surviving					
0	37	—	—	—	—	—			37
1	—	36	1	—	—	—			37
2	—	2	27	—	1	—			30
3	—	—	—	17	—	—			17
4	—	—	—	—	5	—			5
5	—	—	—	—	—	1			1
Total	37	38	28	17	6	1			127

This disagreement is negligible because the average numbers of female children ever born per female calculated from data reported by male and female investigators are 1.86 and 1.82 respectively. The respective standard deviations are 1.62 and 1.56. The difference between the averages is statistically insignificant.

Of the 18 cases where the male and female investigators disagreed, in 10 and 7 cases respectively, female and male investigators were correct. In one case checking could not be done because of non-cooperation of the respondent. Thus, it appears that no single set of investigators is able to collect all correct information. However, on the average, both the sets appear to be equally efficient in collecting information on the number of female children ever born.

Female children surviving: The distribution of the numbers of female children surviving at the time of survey as reported by male and female investigators given in Table 5 shows that the two sets of investigators agreed in 123 of 127 cases. Of the four cases of disagreement, in two, the numbers reported by male investigators were higher than those reported by female investigators. The other two cases showed the reverse. Further investigation revealed that in two cases where female investigators reported 2 female children surviving against only one reported by male investigators, female investigators were correct. In one case, male investigators were correct where they had reported four surviving female children against one reported by female investigators. Non-cooperation of the respondent prevented checking in the remaining one case. The high agreement rate made the average numbers of surviving female children per eligible female as obtained from male and female samples the same (1.37 and 1.36). The respective standard deviations were 1.21 and 1.19 .

The analysis of overlapping schedules shows that the two sets of investigators are able to extract almost the same information on the number of children surviving but fail to do so in case of information on children ever born. In the latter situation, however, neither sex of investigators showed superiority over the others.

Pregnancy Status

The information furnished by male investigators showed that of 127 eligible females, 12 were pregnant at the time of survey. On the other hand, female investigators reported that 14 females were pregnant. Surprisingly enough, only in 9 cases, both the sets of investigators agreed in reporting pregnancy. The estimated number of pregnancies in such a situation, following the Chandrasekaran—Deming technique (1949),[1] may be obtained as 19. Thus, the estimated percentage of pregnant females to total eligible females in the overlapping sample is 14.96. This is higher than any of the two estimates (9.49 and 9.35) of the corresponding percentages in the male and female samples described earlier. The checking of the accuracy of the record of pregnancies by revisits could not be accomplished mainly because of the nature of the question. It was observed that one partner admitted the pregnancy in the presence of the other whereas the latter refused the same. In such a situation there is a doubt that reliable data will be collected by any set of investigators. It is recommended that investigators of both the sexes should be used to collect information on pregnancy status.

Births during one year preceding the date of survey and surviving at the time of enquiry

Male investigators reported the occurrence of 21 births during the year preceding the date of survey. Female investigators, on the other hand, reported only 18. Of these, 17 births were common to both the samples The possibility of misclassifying the births that occurred about a year ago is not ruled out and hence there exists a chance of under or over reporting of births in such surveys. Using the Chandrasekaran-Deming technique the estimated number of births is 22. This shows that 17.3 per cent of eligible females gave birth to a child during the year preceding the date of survey.

Each set of investigators reported the death of only one child that was born during one year preceding the date of enquiry. This death was common to both sets of investigators.

Ever Use of Methods of Family Planning

According to the male investigators, 14 of 127 couples ever used a method of family planning whereas according to the female investigators, only 12 couples belonged to this category. Ten couples were common. It has been pointed out earlier that both sets of investigators fail to elicit accurate information on ever use of methods of family planning. From the information gathered in overlapping enquiries and applying the Chandrasekaran-Deming technique, the estimated number of couples who ever used a method of family planning is 17, i.e., 13.38 per cent of the total. Verification of records confirmed the correctness of the estimate. This implies that the earlier observation that of 573 currently married females (male and female samples combined) 61 ever used a method of family planning can be revised as 573 × 0.1338 to yield 77. The under-reporting of the incidence of ever users may be obtained at about 20 per cent. It may, therefore, be recommended that to obtain the estimate of ever users of methods of family planning in the population, the same set of couples be approached through male and female investigators independently.

Conclusion

Both male and female investigators appear to be equally suitable for collecting information on demographic characteristics, fertility and practice of family planning methods. However, it may be observed that both are likely to under report ever use of family planning methods, pregnancy status of eligible females, number of births etc. Considering the operational difficulties in employing female investigators, it is concluded that male investigators may be entrusted with the collection of relevant information in surveys related to fertility and family planning. At the same time, it is recommended that at least a sub-sample of that investigated by males be again visited by female investigators so that correct estimates of pregnancy status, practice of family planning methods etc., could be obtained.

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The views expressed here are those of the author and need not necessarily reflect those of the agencies mentioned above.

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A DIALOGUE WITH MTP PATIENTS IN A HOSPITAL WARD

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This communication reports a series of interviews of married women who obtained medical termination of pregnancy at the R. G. Kar Medical College Hospital, Calcutta. The objective of this study was (i) to study the socio-economic and demographic characteristics of women seeking MTP, (ii) to find out the grounds for termination, (iii) to ascertain if the women were motivated to adopt family planning methods after MTP, and (iv) to collect information on the nature of facilities available for conducting MTPs in the Hospital.

Procedure

The MTP and Ligation Ward of the Hospital has 48 beds and seven visiting surgeons take care of the MTP and ligation operations.

Interviews of 100 women whose pregnancies were terminated were taken from 9th September to 22nd November, 1974. The interviewer, a female Technical Assistant of the FPR unit, contacted the women in the MTP and Ligation Ward of the Hospital for 34 working days and filled up the Schedule—Questionnaries prepared by the author. The rate of Schedule filling per day varied from one to nine depending upon the availability of new patients in the MTP—Ligation Ward. The study excludes 24 patients, who although interviewed, did not come under the purview of the study because of the social nature of their cases and for non-performance of the termination procedure.

Findings

(a) Background of the couples : Almost half the sample (48%) were 20 to 29 years of age while another 40% convered the age group 30 to 39. As many as 44-45% of both spouses were educated between the primary and middle school levels. While 28% of the husbands had received high school education, only 4% of the wives had reached

that level. Further, 24% of the husbands and 49% of the wives were in the category of 'illiterate to reading level".

About a fifth of the women came from rural areas and the remaining from Calcutta and other urban areas. Also, 69% of the women lived in a nuclear type of family. Roughly speaking, about 83% of the nuclear families resided in the urban areas (city + town).

(b) Fertility behaviour: On an average, the women had 4.4 living children. Husbands with technical-clerical occupations represented 43% of the couples, the next group constituted the menials (24%) and petty business (19%). The average number of living children of the three groups were 4.3, 4.2 and 5.0 respectively. The age of the last child of 31% of the women was between 4 to 12 months, of 47% between 2 to 4 years, and 21% had appreciably grown up children aged 5 years and above.

The average number of living children varied inversely with per capita income. The highest average (5.9) was indicated in the Rs. 0.20 per capita income group. As many as 62% had per capita incomes between Rs. 21 to Rs. 50 and an average of 4.6 children. About 33% had between 1 and 3 living children and the remaining had 4 and above, indicating excess fertility, assuming 2 or 3 children to be the prevailing family size norm. It may be interesting to note that the average number of living male children was in a higher proportion than living female children, which perhaps made the decision to go for an abortion easier from the cultural point of view.

The average number of previous pregnancies of the women was 5.4 as against an average number of 4.4 living children. Women whose husbands' educational level was between "illiteracy and primary" had a higher proportion of pregnancy wastage than those educated upto the middle school level or up to college and above.

The majority of the women had married at or before 17 years of age. About 28% of the women had married below the age of 14, 22% at 15, and 15% each at 16 and 17 years of age. Of the sample, 31% had been married for 18 years or more and had experienced an average of nine pregnancies. Of the 50% who had married at the age of 15 and 17 years and had a marriage duration of over 15 years, the average number of pregnancies was 9.7 and 7.0 respectively, as indicated in Table 1.

(c) Contraceptive status : It was apparent from the data that 60% of the couples did not use any method of birth control while 36% indicated that they had made some efforts in this respect. However, the average number of pregnancies suggest that such efforts to control birth as had been made, were neither regular nor efficient.

TABLE 1

Distribution of women by age at marriage, marriage duration and number of pregnancies experienced

Age at marriage (years)	Marriage duration (years)						
	3-5	6-8	9-11	12-14	15-17	18 and above	Total
Below 14	—	—	6.3 (3)	5.9 (14)	3.0 (1)	8.2 (10)	6.6 (28)
14	3.0 (1)	—	—	—	7.0 (1)	10.4 (5)	8.9 (7)
15	3.0 (2)	3.7 (3)	4.5 (6)	5.5 (2)	8.7 (3)	9.7 (6)	6.3 (22)
16	2.0 (1)	4.0 (1)	4.8 (5)	5.0 (1)	8.5 (2)	8.4 (5)	6.3 (15)
17	2.5 (2)	—	5.0 (3)	6.0 (1)	7.0 (5)	9.2 (4)	6.5 (15)
18	3.5 (2)	3.7 (3)	—	—	—	8.0 (1)	4.3 (6)
19	3.0 (1)	—	8.0 (1)	6.0 (1)	—	—	5.7 (3)
20	—	—	5.0 (1)	—	—	—	5.0 (1)
21 and above	—	—	5.0 (1)	6.5 (2)	—	—	6.0 (3)
Total	2.9 (9)	3.7 (7)	5.2 (20)	5.9 (21)	7.3 (12)	9.0 (31)	6.4 (100)

The figures represent the average number of pregnancies while those in parentheses represent the number of women

(d) MTP : The average duration of the current pregnancy of the women was 11.4 weeks: Of these, 48% had occurred to women aged 20-29. That 47% of the women came for a termination in the first trimester of pregnancy, is an encouraging sign.

The data also indicated that 49% of the pregnancies occurred to the "illiterate" and "can read" groups of women and the duration was also highest in this group. The duration was calculated as the intervening period (expressed in weeks) between the onset date of the last menstrual period and the date of termination.

Most of the women cited multiple reasons (Table 2) for undergoing termination: 32% gave limitation of family size, 36.2% cited economic and 18.8% mother's health as the reasons for wanting an abortion. The illiterate group cited the first two reasons in a higher proportion. It was apparent that the women wished to undergo the operation on the grounds of unwanted pregnancy.

TABLE 2

Distribution of women by educational level and reasons for undergoing abortion

Educational level of wife	Reason for termination: To limit family size	Economic	Fear of handi-capped child	Health of mother	Other reasons · grown up child/family trouble/sickness	Total
Illiterate	20	24	—	9	7	60
	(9.2)	(11.0)	—	(4.1)	(3.2)	(27.5)
Can read	14	17	1	8	8	48
	(6.4)	(7.7)	(0.5)	(3.7)	(3.7)	(22.0)
Primary	20	20	—	13	6	59
	(9.2)	(9.2)	—	(6.0)	(2.7)	(27.1)
Middle	13	13	—	7	4	37
school	(6.0)	(6.0)	—	(3.2)	(1.8)	(17.0)
High	1	3	—	2	1	7
school	(0.4)	(1.4)	—	(0.9)	(0.5)	(3.2)
College and	2	2	—	2	1	7
beyond	(0.9)	(0.9)	—	(0.9)	(0.5)	(3.2)
Total	70	79	1	41	27	218
	(32.1)	(36.2)	(0.5)	(18.8)	(12.4)	(100.0)

Figures in parentheses represent percentages.

The results revealed that 23% informed their parents and mothers-in-law of their decision to take an abortion, 23% their siblings/sisters-in-law, 21.3% their neighbours, while 15.1% maintained silence and informed none. It appears that the illiterate group consulted neighbours and the sibling category in higher proportion, whereas the 'can read' group informed parents, siblings and neighbours. At these two educational levels, communication with neighbours and siblings still persists. All the women informed their husbands of course.

The women had received information about the provisions of the

Medical Termination of Pregnancy Act from multiple sources. Among these, relatives/friends (45.5%), hospitals (22.6%), and doctors (13.2%) constituted the main sources. Interestingly enough, the relative/friend groups acted as the major source for all educational levels.

The respondents' opinion on the provision of facilities for induced abortion was also sought. While 78% thought that the arrangement was helpful, beneficial, good for the society and for women, 19% declined from making any comments.

The women were asked about their approval or disapproval of abortion. The answers indicated that 90.5% approved of the termination procedure on economic (42.1%), family limitation (23.3%), and health (16.4%) grounds. On the contrary, 9 5% did not approve of their own decisions on religious (7.9%) and moral (1.6) grounds. The illiterate and the lower educational groups suffered from this inner tension.

Also, 80% thought that life began after 20 weeks of conception while 17% had no knowledge about this. The age groups 20-24 and 25-29, showed greater ignorance on the subject of the beginning of life after conception. There appeared to be no appreciable difference in knowledge about the subject among different educational groups.

Table 3 shows that the methods of termination adopted in the Hospital were suction, D & E, D & C, saline and hysterotomy. The majority (66%) of the women had a hysterotomy, the next big group comprising those who had abortion by suction (17%). The latter, as was expected, had had shorter durations of pregnancy. The majority of the patients came from the higher parity group.

TABLE 3

Distribution of women by duration (in weeks) of pregnancy and type of termination

Method of termination	Duration of pregnancy (in weeks)					Total
	5-7	8-10	11-13	14-16	20 and above	
Suction	4	11	2	—	—	17
D and E	—	4	2	3	—	9
D and C	—	1	—	—	—	1
Saline	—	1	5	1	—	7
Hysterotomy	2	24	25	10	5	66
Total	6	41	34	14	5	100

Almost 40% of the respondents stated that their health was normal while 38% complained of weakness/anaemic condition. The average number of pregnancies experienced by the women with normal health was higher (6.5) than that experienced by the "weak" group (6.0). The non-response rate was 21%.

All the patients were hospitalized both before and after the operation The average duration of stay (days) in the hospital before abortion was 4.4 days. No relationship was visible between hospital stay and health of the women and type of termination.

The average number of days of stay post abortion was 7.3. Thus, the average total period in the hospital was 11.7 days (4.4 + 7.3). It appeared that the post hospitalization period of the normal, healthy group of women was shorter (6.7 days) than that of the "weaker" group (7.9 days).

It appears that the period of stay especially before the operation in a few cases was rather long. It was reported that the facilities provided were inadequate to handle cases coming from different departments such as Emergency, OPD and Gynaecology. Hence patients wanting a termination of pregnancy had to wait for their turn Another possible reason cited was the reunion wound. In some cases, more than one termination technique was tried on the patient, due to the failure of the previous method, or for medical reasons.

(e) Use of family planning methods following MTP: A large majority (86%) of the women were ligated along with the termination. Of the remaining 14, 11 received no method post termination while the loop was inserted in three women. Of those who did not receive any method from the Hospital, three expressed a desire to use the condom and eight, oral pills. It appeared from the interview data that most of the respondents were not interested in any further births. The women who were not ligated for some reason desired to use birth control methods to avoid further pregnancies. The abortion ordeal, and the hospital stay must have awakened some sort of social consciousness in them about the urgency of preventing unwanted pregnancies.

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CATHOLIC PHILOSOPHY ON CONTRACEPTION

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This paper discusses the teachings of the Catholic Church towards family planning through contraception and presents a repudiation of its reasoning chiefly by some of its own thinkers.

Aims of Marriage

Though marriage is one of the sacred rites of the Church and the right of every individual, there seems to exist a confusion with regard to the specific purpose of marriage in Catholic position. St. Augustine held that martial relations for purposes other than procreation were sinful. This had no difficulty in being understood in his days as marriage was conceived as a mere means to people heaven.

After St. Augustine, marriage was given two definite ends—primary and secondary. Procreation and education of children were the primary ends, and fulfilment of mutual love by psychic and physical manifestations, the secondary. Marital acts could be licit only when the primary purpose was intended. This position should have meant that sterile couples must not copulate and even fertile couples should not, when conception was obviously out of question, such as during pregnancy. But such unions were perfectly lawful in the eyes of the Church. What was the philosophical reason of the Church to agree to its lawfulness when the marital act was not right, when at least an implicit involvement of the primary end, i.e., procreation was required ? Theologians said that since marriage was a contract covering sexual rights, a spouse could consent to the partner's request for marital relations even if procreation was not intended; but they never explained why it would not involve co-operation in a sinful act.

The marital bond is certainly for the total perfection of man and woman. If procreation is the sole purpose of marriage it destroys much of the value and the meaning of love and sex. Dr. Pax observes: "If a child results from sexual union he has the kind of presence which is an overflow of the encounter. To make the presence of the child, the giver of meaning to human sexuality, is to reduce it to something put alongside of something else".[1] Nature itself does not fully show that procreation is the primary end of human sex, because every marital act does not result in a child.

Of late, periodical continence to limit children was accepted by the Church as morally right. This brings us to a new interpretation of the primary purpose of marriage. In the rhythm method, the fertile couples keep out the primary purpose deliberately from many marital acts. Now, marriage is even officially declared to be not merely meant for procreation. In the *Pastoral Construction of the Church in the World of Today, Vatican II* says, "Marriage, to be sure, is not instituted solely for procreation."[2]

Even if the primary ends of marriage are fully accepted one can still argue for contraception. For one can practise it precisely to preserve the primary ends of marriage, which include not only procreation of children but their education too. We shall cull a passage from an article of Louis Dupre, a lay philosopher and theologian: "Let us take the case of a family with several children in which it is clearly indicated that for serious physiological, economic or psychological reasons, no more offspring is desirable. Let us assume that in this case, as in many others, the rhythm method is not safe. If complete continence leads to strong tensions (as it usually does), or even to the estrangement of husband and wife, the question arises whether the well-being and education of the children as well as the love between husband and wife is not more important than a respect for the physical integrity of the individual act of intercourse. . . what is at stake here is the primary end of marriage itself which includes the education of the children which can be properly attained only in a harmonious family life."[3]

Against Nature

The Church holds that contraception is against nature, is an intrinsic evil and therefore immoral. Pope Pius XII condemed contraception as a deed which is shameful and intrinsically vicious. On Christian marriage he wrote that "Since the conjugal act is destined primarily by nature for the begetting of children, those who in exercising it deliberately frustrate its natural power and purpose, sin against nature and commit a deed which is shameful and intrinsically vicious."[4] Pope John XXIII said: "One cannot in any way resort to erroneous doctrines and pernicious and fatal methods to limit offspring."[5] Contraception is against nature. Artificiality is introduced into the most intimate relation of man. Artificial control of conception is essentially evil, because man sets the faculty in motion and at the same time prevents the faculty from reaching its natural end.

Contraception is a rejecton of moral values. Human faculties are instruments provided by nature for realizing the purpose of man's natural instincts and appetites. The act of a faculty is naturally good when it attains the natural end of the corresponding tendency. But to use a faculty and simultaneously to set out to frustrate the natural purpose of that faculty is wrong. The primary purpose of the sexual tendency is procreation. There is pleasure in sexual intercourse, but this is not meant as its purpose but only to induce man to undertake the burden of a family. Nature's intention for coiton is reproduction. Therefore, preventing this natural end is unnnatural and a violation of moral law. Not only those who practise contraception commit a serious sin but also those who are instrumental in performing contraceptive operations and even those who are merely co-operating as assistants and nurses normally commit sin.[6]

The problem of nature is something which has been misunderstood. In the earlier days nature and divine will were considered one and the same in their opposition to technology. But now we know that nature implies technology.[7] Also nature is not merely the given biological functions of man. Today, no one objects to vaccinations. Yet some firmly believe contraception frustrates nature. Frustration of nature is a tricky problem. "Frustration of nature far from immoral, is man's vocation. In the march of physical science and technology it means the progressively rational control of nature by man and for man. . . . When nature is deficient in doing what it should for human welfare, human art makes up for that deficiency. If this be the frustration of nature the human cry is 'Give us more of it' ".[8]

The natural law is not something which had been codified from the beginning. Fr. Rouquette, S. J. says: "The encyclical (Pacem in Terris) does not regard natural law as a collection of prescriptions codified in advance, but rather as a development, a progressive discovery, of what man really is."[9] Man has intellect and a free will. He is not constrained by his nature as animals are. Man's intelligence and will accept, develop and correct what is given to him in nature.

Some thinkers positively rule out the contention that contraception is against nature. Victor Heylen says that progestins used intelligently reproduce a natural fact which is not at all against nature.[10] Janssens, Professor of Louvain, is convinced that anti-ovulation pills do not violate the structure of the marital act. From this point of view, the act is the same whether one makes use of these pills or the non-fertile period.[11] Thomas L. Hayes believed that since the rhythm method is allowed, coitus interruptus, condoms and diaphragms could be allowed.[12]

While opposed to contraception, favouring the rhythm method seems to show a contradictory stand. To regulate sexual life within marriage by the calendar is to introduce an extraneous element and this is an interference with nature. Sexual coiton usually takes place at random. But, in following the rhythm method, this is regulated, by a human act according to the calendar on the wall. "In having intercourse during the sterile periods and in practising continence at all other times one systematically avoids conception and thereby makes the time element into an essential circumstance of the total moral act. A deliberate interference with the timing of the mechanism of procreation is not essentially different from physical interference."[13]

We have earlier noted that natural law is not a set of rigid and inflexible rules. Man's conception of nature progressively grows with the times. Taking the life of a man is against nature. But what transformation of its application has taken place! In ancient times, capital punishment was left to the individual. A master could 'rightly' slay his slaves. Later, it became a moral crime. Today, the power for capital punishment is transferred to public authority. But now even this is called into question. It is difficult to understand the absoluteness of sex in the marital relation when we compare it with the preservation of human life itself. The preservation of life is the most basic end of man's nature and yet, it is not regarded as absolute a value as sex. In self defence, we can murder our neighbour. In just war, we can destroy thousands of human lives. One is acclaimed virtuous and heroic when one lays down his life for a noble end. "Why, then", asks Louis Dupre, "Should this nature, or, more correctly, one particular act out of the many by which it attains its purpose become an absolute in marital intercourse ?"[4] Finally, natural law cannot be the sole property of Catholics. Non-Catholics and non-Christians also have an insight into natural laws. But, Catholics claim that contraception is against nature, while Protestant, Christians and many other religious groups do not see it as a violation of nature. Louis Dupre quotes a Jesuit Father to support his belief that emphasis on natural law is on account of an absence of valid argument in the scriptures to favour the Catholic position.[15]

Personal Responsibility

Many parents leave the number of children they beget to divine providence. Till recently, Catholics were asked to do so. Now leaving the number of children to providence seems to be the attempt of the parents to escape from their responsibility of bringing up a well planned family. Owing to modern medical treatment, the birth rate has gone up due to the creation of favourable health conditions and reduction of mortality. A healthy marriage has to reckon with a period of about 30 years of fertility. "The partners are not justified in shirking their responsibility by leaving it to a wrongly understood divine providence. Our generation with its experience of war and an uncertain future, certainly needs confidence and trust in God. But this trust in God shows itself, not in making divine providence responsible for the number of children, but rather in facing this responsibility which is theirs, consciously and joyfully."[16]

In their opposition to contraception antagonists always bring in the evil consequences that might follow contraceptive practices. They are afraid that when a child, the probable outcome of a sexual union of mature people, is got rid of, illegitimate unions will increase. If one hopes that one can restrain people from sexual abuse through the fear of others only, then how will one be able to restrain people from solitary sins and married people from the solicitations of other men and women ? Of course, those adults who avoid premarital relations solely from the fear of conception might abuse contraceptive methods. But, it cannot be agreed that fear of abuse and danger, or real abuse should make a good thing evil. Bus accidents and misuse of firearms do not make bus journeys and the use of arms evil. "Certainly this new freedom (contraception) can be a source of abuse, but there is no doubt it is a source of greater personal responsibility for the christian."[17]

In the Indian context, some Catholics are liberal in quoting Gandhiji in support of their campaign against contraception: "The difference between a prostitute and a woman who uses contraceptive is only that the former sells her body to several men and a woman using contraceptive methods sells it to one man."[18] These men conveniently ignore a more fundamental but erroneous teaching of Gandhiji on sexual union in married life. Marital union except for progeny is sinful. Contraception favours marital union excluding progeny. Therefore contraception is sinful. Let his own words testify to this: "I do suggest that man must cease to indulge their animal passions after the need for progeny has ceased."[19] "The law of nature is that Brahmacharya may be broken only when the husband and wife feel a desire for progeny."[20] "Man has no right to touch his wife as long as she does not wish to have a child, and the woman should have the will power to resist even her own husband."[21] One day a man of 30 who was practising self-restraint for three years against the will of his wife who was putting pressure on him to give her "the joy of the poor mortals", approached Gandhiji for advice. "There is no moral obligation", Gandhiji was emphatic, "on the part of the husband to yield to his wife's importunities."[22]

Need for Understanding

Germain G. Grizez thinks ". . . if all those who wrote as philosphers on contraception during the past thirty-five years had done their best to do the philosophical task that needed to be done, we would not be so confused as we are today."[23] Lack of understanding among theologians about the people lead the former to false representations of the problems of the people. When long-respected moral conducts and laws were differently interpreted and practised, the religious leaders and theologians were completely busy defending those ancient moral norms. They did not try to re-examine carefully the doctrinal famework in which such norms were formulated in the beginning. In Europe many people stopped going to sacrements, becausee they did not or could not accept the Church's stand on contraception.[24] Many educated and enlightened Indians too disregard the Church's teaching on contraception. Are the priests and the theologians aware of the increasing gap between the official teaching and the practise of the faithful? Do they enter into the feeling of their flock? There are several priests who do realize the absurdity of the Catholic teaching on contraception. But their tongues are tied and many of them, "wash their hands" clean by leaving the matter to the choice of the individual couples concerned. Thomas L. Hayes calls for courage on the part of the Church to admit the possible inadequacy of some aspects of the Church's past teaching on sex and marriage, as well as to tackle the difficult and delicate work of reformulating its teaching.[25] There is no doubt that the Church's teaching on contraception has alienated many lay people from priests, and the priests from the dogmatic organization of the Church itself. This paves the way for them to free themselves of other religious constraints so that they may become freer human beings. Let individual and social need be the criteria of morality.

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OPINION LEADERS AS FAMILY PLANNING AGENTS IN RURAL INDIA: A REAPPRAISAL†

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The success or failure of the Indian Government's family planning efforts depends to a large extent on its ability to motivate the majority of India's rural population to adopt family planning concepts and methods. However, poor economic and educational conditions, shortage of trained manpower resources and physical and socio-cultural barriers have resulted in low media penetration and media saturation in rural India. As a consequence, progress in adoption of family planning methods in India's rural sectors has been slow and, at times, frustrating. Hence, as a programme policy, the Indian Government decided to intensify the utilization of already existing local communication networks for the rapid and inexpensive spread of family planning ideas and methods in rural India. One result of such a programme policy decision is a heavy reliance on a cadre of local village influentials or local functionaries to act as family planning promoters at the "grass-roots" level. One of the many guiding principles in the Indian Government's "extended family planning programme" is as follows:

> Searching out influential local people whose experiences and resources have educational value in the promotion of family planning, and providing training and developing roles for these leaders to strengthen the educational work in villages.*

A summary of the family planning programme in India states that:

> Since leaders know the channels of communication of their respective communities, information supplied to them will be fed into these channels. This will be a great help in the development of motivational and educational effort and be a source of social pressure and social support.[1]

The assumption and/or rationale in the opinion leadership approach is that in every village or community there are leaders who can be easily located and contacted and through whom family planning information could be diffused to the rest of the community. It is believed that these opinion leaders are respected persons in their communities their active involvement in informing, motivating and recruiting acceptors will give the much needed fillip to the programme, and at the same time reduce the cost per customer.

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† This article is an expanded version of a paper read at the First Annual Meeting of the World Population Society, held in Washington, D.C., February 7-9, 1974.

* Raina, B. L., Family Planning Programme: Report for 1962-63, New Delhi, Ministry of Health, Directorate of Health Services, Government of India.

Local leaders as change agents

The idea that local leaders can be used effectively as agents for diffusion of innovations (which led to the formulation of the "two-step flow" or "multi-step flow" or "trickledown" communication model) has been extensively examined and validated through studies in rural sociology and to a limited extent in other areas as well.[2-8] However, the role played by local leaders in diffusing family planning innovations needs a critical examination. Some important reasons for this lie in the paucity of field research in this area, the taboo nature of the family planning topic, and in our opinion, questionable assumptions and methodology used in some of these studies. In addition, most of these studies explore the leadership pattern by examining personal and personality characteristics rather than focusing on the *processes* that make a person an opinion leader. Most important, in these studies, the *patterns* of interpersonal communication between the leader-follower dyad received very little attention.

Opinion leaders in family planning diffusion

Although literature regarding the potential role of opinion leaders in family planning cannot be encompassed in this article,* a survey of relevant and current literature reveals that opinions in this area are diversified and often conflicting.

Kantner and Stycos[9] observed in Puerto Rico that opinion leaders were effective in making contraceptives available and in developing effective lines of communication for family planning. A few studies contucted in India have demonstrated that local leaders are willing to act as agents and promoters for family planning and that they can be effectively utilized to diffuse family planning at the local level.[10-15] The potential usefulness of local leaders in family planning programmes has been emphasized in studies done in Indonesia,[16] Iran,[17, 18] Pakistan,[19] Puerto Rico,[9] Turkey[20] and the United States.[21]

On the other hand, many scholars, including some rural sociologists, have warned against a heavy reliance on local leaders to act as agents for change programmes, including family planning. Small group researches show that status hierarchy between the leaders and the audience produce communication barriers and slow the trickling-down of new ideas from the source to the receiver.[22-27] Stycos,[28] discussing the patterns of interpersonal communication in a Greek village, states that "in an underdeveloped country the opinion leader's importance is greatly magnified due to his monopoly on certain skills. His effect may be limited, however, due to status barriers between him and his audience." Dube[26] argued that the opinion leaders are elites at the local level. These local elites would act in such ways as to preserve the native culture against external threat. Hence, it is possible that these leaders may actively oppose technological and ideological innovations that affect the native social system.

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* For a comprehensive treatment of the potential role of opinion leaders in family planning, please refer to Rosario, F. Z. (1917), *Journalism Quarterly*, 48 : 2, 288.

In the area of family planning communication, a few studies have shown evidence contrary to the "two-step flow" communication model. The family planning workers at Comila Project, East Pakistan, (now Bangladesh), contacted representatives of local councils and the chairmen of village co-operative societies to become family planning agents They soon found out that these (community) leaders worked ineffectively or not at all as family planning agents; "presumably, this was an activity that they felt would lose them local support. Another group of local barbers felt that they would be ridiculed if they sold contraceptives."[29] Anthropologists Marshall[30] and Mencher,[31] based on their field experience in India's villages, have questioned the wisdom of placing reliance on village leaders to promote family planning. In the family planning programme in Kerala state in India, local leaders were not very useful in reaching couples with family planning messages.[32] Bogue,[33] observing the nature of communication in family planning in various parts of Asia, concluded that the theory of opinion leadership may be less applicable in family planning than in other issues.

These conflicting views on the potential role of local leaders in family planning programmes prompted this author to examine the following basic question:

Can the Indian family planning programme be built around local opinion leaders as focal points for family planning promotion in rural India? As a part of a larger anthropological research on interpersonal communication in rural India, a study was undertaken in a north Indian village to assess the willingness, ability and effectiveness of opinion leaders as family planning agents in the rural Indian cultural milieu.* Our conclusions are based on an intensive micro-study of one village. Hence great caution is advised when extending these conclusions to rural India as a whole. A similar field research, either to validate or question these conclusions, is planned on a larger scale in Tamil Nadu villages. This field research is expected to be conducted in 1975-76. We preseent below our methodology and findings.

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* For more details please refer to Mani, S. B., "Family Planning Communication in Rural India" (Unpublished Ph D. Dissertation, Syracuse, University, New York, 1970).

Geographical area of field research

Field research was conducted in Mangalnagar,* one of the 33 villages covered by the Mehrauli Community Development Project. These villages are also used by the Central Family Planning Institute, New Delhi, for a demonstration-cum-action project for an extended family planning programme. Field research was conducted during 1966-67, summer 1969 and summer 1972.

Opinion leaders and formal leaders

Sociologists and social psychologists have used different terms for persons who are influential in a community—"key communicators", "informal leaders", "influentials", "spark plugs" and "gate keepers".[8] In this study, the terms "opinion leaders" and "formal leaders" are used to discuss the leadership pattern in Mangalnagar. The definition suggested by Rogers[34] is used to define an opinion leader viz. that an opinion leader is "that individual from whom others seek information and advice". In this study. opinion leadership is also defined in terms of sociometric choice. Sociometric choice reveals the feelings or preference relations among members with their opinion leaders.[35] Thus, influence, advice and preference relations have been used as criteria for selecting and/or defining opinion leadership. A formal leader is defined as a person who holds an elective office in the village council *(panchayat)*.

Methodology

To locate Mangalnagar's opinion leaders, a disproportional stratified sample of fifty adult male members was selected. These persons were asked the question, "In your opinion, who are the most influential persons in Mangalnagar? Please give five names in order of preference". "Influential" was not defined and specific areas of their influence were unnamed. The initial responses of most informants were, "there is no leader in this village", "everyone is a leader", "these days no one listens to another person", etc. Further probing, however, resulted in a list of 29 persons who were believed to be influental in the village. Scoring of the opinion leaders was done by giving five points to the first choice, four points to the second choice and so on until the fifth choice which was given one point. Based on sociometric choice, the total number of points received by each of the 29 persons were calculated. All those persons who received more than three points were selected as opinion leaders for further investigation. This resulted in the identification of 18 opinion leaders.

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* We have used a pseudonym to conceal the identity of the village.

Through precoded schedules and unstructured interviews, the age, social status, economic and educational backgrounds, landholdings, type of house and other characteristics of these 18 opinion leaders were recorded. Actual case studies and observations of the decision-making processes in village disputes were recorded through participant observation. In addition, a list of characteristics of formal leaders was obtained Formal leaders were persons who were elected to hold positions in the village council *(panchayat)*. The study focussed on the patterns of interaction and communication between the opinion leaders and the non-leaders in Mangalnagar. However, seven of the eleven formal leaders were also included under opinion leaders, showing a great degree of overlapping between the two leadership patterns In order to study the patterns of communication between the opinion leaders and the non-leaders, we posed a series of questions to both opinion leaders and the randomly selected 50 adult male villagers, designated as "followers".

Characteristics of the leaders*

As mentioned earlier, there were eleven formal leaders and eighteen opinion leaders in Mangalnagar. Seven of the formal leaders were also included under opinion leaders. This indicates that in this village a large proportion of formal leaders was actually a translation of opinion leadership into political terms. In Table 1 we have compared selected characteristics of opinion leaders, formal leaders, and a randomly selected 100 heads of households.

The numerical strength of the caste is an important factor in the leadership pattern in Mangalnagar, and most leaders (formal and opinion) belong to the Gujar caste, the largest caste in the village. We found that the opinion leaders were generally old and with a traditionally good socio-economic backgrounds. Although the opinion leaders had slightly more formal education as compared to the heads of households and slightly less as compared to the formal leaders, in general, their formal educational attainment was very low. Mass media exposure, as measured by subscription to newspapers, number

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* For a detailed discussion on various characteristics of opinion leaders and formal leaders, please refer to Mani, S. B, Ph D. Dissertation, Syracuse University, New York, 1970, on "Family Planning Communication in Rural India."

TABLE 1

Characteristics of opinion leaders, formal leaders and heads of households

Characteristics	Formal leaders (N=18)	(Averages)	Heads of households (N=100)
Age	48.3	60.5	52.2
Years of formal schooling	3.3	2.8	1.6
Houses electrified	0.6	0.7	0.3
Radios per person	0.3	0.2	0.06

of radios per person (per household) and number of hours spent each day in listening to the radio (especially to the news items), was very limited, although better than that of the non-leaders.

Tse average age of the opinion leaders was about 60 years as compared to 48 years for formal leaders and 52 years for heads of households. All except two of the opinion leaders were over 40 years of age. All the opinion leaders were married and had children; except two, all had grand-children. Eight of the opinion leaders were widowers. The average age of the wives (those living) of the opinion leaders was 49 years and hence most of them were beyond the child-bearing age. The significance of age and marital status of the opinion leaders in their potential role as family planning agents will be discussed later.

Our findings reveal that in Mangalnagar, caste status and the numerical strength of a particular caste have a strong influence on opinion leadership patterns. Factional leaders, especially those who were headmen of factions still retain power and influence as opinion leaders. Socio-economic status, religious background, length of residence in the village, age and family reputation were found to be important factors in determining the village leadership pattern. In brief, in this village the opinion leadership pattern was characterized by those factors that are rooted in and sanctioned by tradition, and not so much by cosmopolite characteristics.

Opinion leadership and communication behaviour

In order to determine the pattern of leader-follower interpersonal communication, we asked the randomly selected 50 male respondents about the capability of each opinion leader for giving adivce about various events.** We divided the political events into two categories —internal political events (disputes within the village) and external political events (regional and national political events that take place outside the village). Their responses are given in Table 2.

TABLE 2

Frequency responses about the capability of opinion leaders for giving advice on various events

	Events						
	Political						
Leaders*	External	Internal	Social	Religious	Agricultural	Crises	Sexual
A	11	5	5	3	8	8	1
B	2	5	4	2	—	3	—
C	2	8	6	2	2	5	—
D	3	4	4	—	3	2	—
E	4	1	2	—	—	—	—
F	3	1	1	—	6	4	—
G	2	5	3	2	—	—	—
H	—	2	2	1	2	1	—
I	2	3	3	—	—	3	—
J	4	1	—	—	3	4	—
K	—	1	7	31	—	—	—
L	—	4	4	2	—	—	—
M	1	3	2	3	—	—	—
N	3	—	—	—	2	2	—
O	1	2	—	1	—	—	—
P	3	—	—	—	2	—	1
Q	2	2	2	1	—	3	—
R	2	2	2	1	—	3	1
Total	45	47	45	49	28	38	3

* Letters are used instead of names to conceal identity

Table 2 indicates that villagers considered only one of the 18 opinion leaders as being polymorphic, capable of giving advice on all

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** In order to elicit response, the following question was administered to each of the respondents : "If you need advice on the ——————(one of the six) event, which of the following opinion leaders would you select?" The respondent was given the name of all the 18 opinion leaders the specified topics. A majority of respondents mentioned that they went to the opinion leaders mostly to settle village disputes and to obtain information on external political events. From the respondents' points of view, in this village, the opinion leaders were ineffective in giving advice on sexual matters.

To examine the pattern of communication and information source from the opinion leaders' points of view, they were asked the question, "Generally speaking, how do you get information on topics of daily interest? Please name as many sources as possible" We did not specify the topics or events for which information was sought. The opinion leaders' responses are given in Table 3.

TABLE 3

Sources providing general information to the opinion leaders (N=18)

Information Sources	Percentage of responses*
Friends	77.7
Other leaders	61.1
Other sources	61.1
Visual media	50.0
Agents	44.0
Radio	33.3
Group meetings	27.5
Relatives	27.5
Written media	22.2

* Multiple responses.

† Other sources include contacts outside the village, visitors to the village (travelling salesmen, government officials, mailmen, bus drivers, village school teachers, etc)

From Table 3 we find that friends form the most important source for the opinion leaders. Among mass media, visual media (posters, exhibitions) were most effective and written media (newspapers, "hand-outs") the least effective. It seems that the opinion leaders do depend upon external contacts or on sources outside the village for information. This is evident from the high percentage of responses mentioning "other sources". The higher percentages for friends and other leaders as information sources indicate that the spread of information is person-to-person and horizontal.

The opinion leaders were asked, "On what occasions do the villagers generally seek advice and opinion from you? Please name as many occasions or topics as possible". Their responses are given in Table 4. The opinion leaders were shown the list of six events so that they could confine their responses to these events or topics.

TABLE 4

Frequency of people seeking advice and opinion on different occasions (topics) from the opinion leaders (N = 18)

Occasions or topics	Frequency of responses	Percentage*
Political	14	77.7
Social	9	50.0
Religious	.. 3	16.6
Agricultural	6	33.3
Crises	10	55.5
Sexual	0	00.0

* Multiple responses

From Table 4 we note that the leaders' opinions on political events are much sought after, especially in settling disputes within the village. Occasionally, they are also important in communicating the grievances of the villagers to government officials. None of the opinion leaders mentioned giving advice on sexual matters. However, three opinion leaders did say that some villagers approached them regarding disputes arising out of illegal sexual relations. We included these incidents under political events (internal events or disputes). In our opinion, these villagers went to the opinion leaders not because they were believed to be experts on sexual matters but because they wer considered capable of settling disputes.

Opinion leadership and family planning communication

From our field data, we suspected that opinion leaders made a distinction between sexual events and matters pertaining to family planning and birth control. Hence we asked the opinion leaders whether the villagers come to them for advice on family planning. Only three of the 18 leaders mentioned that they had discussed family planning with the villagers. Two of the three admitted that the villagers came to them to discuss rather than to seek advice and opinion on family planning. Further probes revealed that these persons came to the leaders as friends rather than as those seeking advice from a leader.

The opinion leaders talked about sexual matters among their friends. Twelve of the 18 opinion leaders answered negatively to the question, "Do you generally talk about sex and family planning with other villagers?" Three leaders mentioned that they had talked about sex with members of other castes. However, only one of these three said that he had talked about family planning with persons belonging to another caste. Most leaders mentioned that they usually discussed sex, and occasionally family planning, with members of their own faction, during their evening gossip sessions around the *hukka* (water smoke-pipe). Thus, we found that most interpersonal communication on matters pertaining to sex was restricted to members of their own faction. Intercaste communication regarding sex, and especially family planning, was extremely limited if not totally absent.

Opinion leaders' family planning awareness, knowledge and practice

Fourteen of the eighteen leaders replied that India has a population problem, three said that they did not know and only one answered that India does not have any population problem. Twelve opinion leaders believed that man could control the number of children he desires; two stated that they were too old to think about this problem, and the other four mentioned that controlling the number of children was in the hands of both god and men.

As for the attitudes of opinion leaders towards family planning, six favoured family planning, nine remained neutral and the other three were actively against family planning.

The opinion leaders were asked how they became aware of family planning. Their responses are given in Table 5. From this table we note that friends formed the most important information source for family planning awareness. Second in importance were the visual media (mostly posters). Other sources and workers of the Central Family Planning Institute ranked third and fourth respectively among information sources. Only two of the eighteen leaders mentioned that they had attended a family planning orientation camp held by the Central Family Planning Institute, New Delhi. These two leaders did not give any specific reasons for discontinuing their attendance at these orientation camps. All the eighteen opinion leaders were aware of family planning. Like other villagers, the opinion leaders also confused family planning with complete or permanent stoppage of births.

Knowledge of contraception

To assess the extent of knowledge of contraception among opinion leaders, they were asked to list as many contraceptive methods as

TABLE 5

Family planning awareness and information sources of opinion leaders (N = 18)

Information sources	Percentage of responses*
Personal Media	50.0
Other sources†	27.5
CFPI agents‡	22.2
Other leaders	5.5
Relatives	0.0
Mass Media	
Visual media	33.3
Written media	11.1
Group meetings	11.1..
Radio	0.0

* Multiple responses

† Other sources include contacts outside the village, travelling salesmen, mailmen, visitors to the village and bus drivers

‡ Central Family Planning Institute agents, New Delhi

they could (we have included abortion although this is not a contraceptive method). Their responses are given in Tables 6 and 7. All the eighteen opinion leaders knew at least one method of delaying or postponing conception. A large percentage of opinion leaders mentioned abstinence. The condom, loop and male sterilisation ranked in that order based on the frequency with which the opinion leaders mentioned their awareness of these methods. The average number of contraceptive methods konwn to opinion leaders was 3.5.

Reporting that a person is aware of a method does not mean that he has full knowledge of it. We should treat the responses with great caution. For example, seven of the opinion leaders had not seen a condom, eight of the eleven opinion leaders who mentioned awareness of the loop had not seen the loop, and five leaders who claimed to know about male sterilisation, believed that it was the same as castration. Like the common villagers, many opinion leaders believed that contraceptive methods are abortive agents. "Injection" as a contraceptive method mentioned by some, taxes the imagination of this author. At the time of my field research I did not come across any such method and none of family planning agents, whom I interviewed extensively, were even aware of such a method.

TABLE 6

Opinion leaders' contraceptive knowledge/awareness

Contraceptive method	Opinion leaders (N=18) (per cent)*
Abstinence	77.7
Condom	66.6
Loop	61.1
Male sterilisation	55.5
Withdrawal	33.3
"Injection"	22.2
Rhythm	16.6
Induced abortion	11.1
Oral pills	0.0
Vaginal or foam tablets	0.0

* Multiple responses

TABLE 7

Number of contraceptive methods mentioned by opinion leaders

Number of contraceptive methods	Number of leaders knowing the methods (N=18)
6	1
5	2
4	6
3	5
2	3
1	1
0	0

Contraceptive usage among opinion leaders

Although all of the eighteen opinion leaders knew of at least one method, only ten of them reported that they had ever used contraceptive methods. Eight mentioned that they had practised abstinence, five leaders stated that they had used the withdrawal method, three mentioned the rhythm method and two said that they had tried the condom. Although three of the opinion leaders mentioned that they had used the rhythm method in the past, detailed investigation revealed that their knowledge about the "safe" and "dangerous" days was erroneous. Condoms were found to be unsatisfactory by two leaders who had tried them. Loss of sexual pleasure, breakage during coitus, "production of heat during intercourse due to friction" and the wife's refusal or objection to the use of condoms were some of the reasons given for their discontinuance.* Only one of the leaders expressed a desire to undergo sterilisation. None of the opinion leaders' wives had ever used loops, oral pills or vaginal tablets. Although the wives of nine leaders had natural abortions, no case of induced abortion was reported.

To the question whether the opinion leaders were interested in controlling the size of their families, only two answered affirmatively. One refused to answer and of the others, eight said that they were widowed and therefore were not interested in the subject at all. Three leaders were actively against the use of any artificial methods to control births. They gave personal and religious reasons for being against artificial methods. Four opinion leaders said that they were too old to have any more children and hence did not care much about family planning.

The opinion leaders were asked if they would be willing to act as agents/promoters for family planning in the village. The task, it was explained to them, would involve disseminating of family planning information to other villagers and storage and distribution of contraceptives. Of the eighteen opinion leaders, fifteen totally refused, the remaining three were hesitant, although they were willing to act as family planning agents. Of the three willing leaders, two owned vegetable and tea shops. They said that it would be possible for them to sell contraceptives in their shops. As for their active co-operation in spreading family planning information to other villagers, all the three opinion leaders indicated a clear hesitation. They said that it would be difficult for them to go to the houses of persons of lower caste and talk to them freely about family planning.

Discussion

Data revealed that the opinion leadership pattern in Mangalnagar was characterized by those factors that are rooted in tradition. Family reputation, socio-economic and religious backgrounds, old age, village residence, numerical strength of the caste and/or faction, and the amount of land owned were some of the important criteria determining opinion leadership. Although the opinion leaders were slightly better educated, had greater mass media exposure and were more cosmopolite than the non-leaders, these traits do not appear to be the determining factors for opinion leadership. Traditional leaders still dominated the village scene in political and socio-economic spheres. With the introduction of the elected village council *(panchayat)*, the traditional leadership pattern seems to assert itself in a new form, making use of the new and emerging political structure.

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* In this village, the women were of the opinion that only those who visit the prostitutes should use condoms Hence many were against their husbands using this method.

Our findings also indicate that the villagers still respect old age. If we consider old age as an index of traditionalism, we are led to believe that the opinion leaders are conforming more to the social system than the followers. "Where norms are more traditional, the opinion leaders are more traditional than their followers".[36] We also noted that opinion leadership in this village was not concentrated in a single individual, but was diffused among a number of persons. The villagers selected different leaders for information/advice on different topics. From our data it was evident that *opinion leadership varied greatly as a function of the content of communication.* Therefore, the effectiveness of the opinion leaders has to be examined under specific situations facing distinctive problems.

Although the opinion leaders were more exposed to mass media than the non-leaders, mass media in general were ineffective as com--pared to personal media in informing the leaders. This was particularly so in informing opinion leaders about family planning and contraceptive methods. Friends (and not relatives) were found to be the most effective information source for family planning awareness and contraceptive "knowledge" of the opinion leaders. Although for non-sexual topics/events opinion leaders sought information from other leaders, such communication did not take place for matters regarding sex and family planning. These findings indicate that in Mangalnagar, communication is more likely to occur among persons who belong to similar socio-economic status, are of the same age group and have similar interests. From this we could hypothesize that *the more the social distinction between individuals (heterophilous individuals), the less will be the communication between them, especially if the topic under discussion is considered taboo.* In other words, communication on topics that are considered taboo is more likely to take place between *homophilous* rather than *heterophilous* individuals. Thus, our findings support Stycos's belief that an opinion leader's influence may be "limited. . . due to status barriers between him and his audience".[38]

Socio-cultural interpretation

Let us analyze the interpersonal communication pattern, especially in the area of family planning, between the opinion leaders and the followers in the rural Indian socio-cultural milieu. Studies in applied anthropology have revealed that a thorough, knowledge of the people—their culture and behavioural patterns is as important as the right choice of techniques with which planned changes are to be introduced. The kind of ideas that are acceptable to a community, the reasons for their acceptance or rejection and the pathways through which information about innovations flow through a community are not universal but are singular qualities of specific cultures. In addition, Marshall[36] discovered in a north Indian village that more than one communication network existed and these communication networks were "subject-specific". In other words, the *content* of communication is also an important variable in communication strategies.

From a socio-cultural perspective, the study of the problem of family planning in rural India demands the discovery of certain underlying principles or value orientations which organize and influence the aspirations and behaviour patterns of the members in a community. We adopted Opler's themal approach in order to discover certain central tendencies which influence the basic attitudes and behaviour patterns of the villagers.[37] Opler[38] defines a theme as "a postulate or position, declared or implied, and usually controlling behaviour and stimulating activity, which is tacitly approved or openly promoted in a society". According to him,[39] a culture has a number of interacting themes that set the course for and influence current thought and action. We believe that the themal approach brings out the elan of a culture better than a traditional description of cultural materials.

From the socio-cultural data on the village, we isolated a number of themes. For this study, which examines the role of opinion leaders as family planning agents in rural India, we shall focus on the following themes:[*] (i) social stratification and hierarchy (segmentation), (ii) purity-pollution, (iii) deference for old age, and (iv) importance and dominance of the male.

(i) *Social stratification and hierarchy*

The "institutionalized inequality" in the form of a stratified and well defined caste system, with its accompanying rigid rules pertaining to intercaste relations, results in social insulation between members of different castes. Such a rigid stratification acts as a major barrier to free communication across caste lines. This is especially marked between the opinion leaders and the common villagers. Our data indicate that in Mangalnagar a majority of the opinion leaders come from the higher castes, belong to "well-to-do" families and enjoy more than average socio-economic status. Lower caste members do not look upon these leaders as their equals but as their social superiors, although often accompanied by suspicion, jealousy and distrust. As a result, the lower caste members avoid unnecessary contacts and communication with the opinion leaders. Whenever they communicate, the villagers usually receive orders rather than discuss important issues with the opinion leaders. In brief, the common villagers, especially if they are members of lower castes, act as subordinates to the opinion leaders.

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[*] For an exhaustive treatment of various themes in rural India and their effect on interpersonal communication behaviour in Mangalnagar, please see Mani, S. B., Ph D Dissertation, Syracuse University, 1970, on "Family Planning in Rural India".

Family planning communication involves free and frank discussion on sex, a topic beset with numerous taboos in the rural Indian cultural contaxt. In addition, due to the distinct socio-economic status of the opinion leaders, little free communication takes place between them and the non-leaders. We also noted that neither did the opinion leaders consider themselves as being capable of giving advice or opinion on matters pertaining to sex and family planning, nor did the villagers look upon them as experts on such matters. This was evident in the relative infrequency with which the villagers cited the leaders as a source for family planning information and consultation. Data indicate that the opinion leaders confined their communication on sex and family planning to members of their own socio-economic and age groups. Rigid caste rules force communication to be *horizontal,* even across village boundaries rather than vertical across caste lines. Since inter-caste communication regarding family planning was extremely limited, if not absent, we are led to believe that under the present social conditions, a "top-down-bottom" approach, using opinion leaders, in village India is impractical

(ii) *Purity and pollution*

If we are to understand intra-village communication patterns in India, the theme of purity and pollution is important. Friendship is generally along caste lines. Members of different castes are not only socially kept apart, but they also live in separate sections of the village. Unless necessary, members of different castes do not trespass each other's territory. Deeply ingrained in such arrangements is the concept of pollution through commensality and contact.

We noted earlier that the opinion leaders belonged to higher castes and, as a result, occupy a higher position in the purity-pollution scale as compared to the non-leaders. This was perhaps one of the reasons why the leaders hesitated to act as family agents in the village and indicated that it would be difficult for them to talk with members of lower castes about sex and family planning. In the village council meetings we observed that members of different castes sat in different clusters. These inhibitions and prohibitions on free interpersonal relations were perhaps due to the purity-pollution theme. Under such social structural conditions we cannot expect the members of higher castes, especially if they are leaders, to sit as social equals and talk about family planning intimately with lower caste members.

(iii) *Deference for old age*

Our findings revealed that not only was communication channelled along caste and sex lines, but was also generally limited to persons belonging to the same age group. This pattern was more marked for males than for females, particularly in any discussion pertaining to sex and family planning. Young men in general were hesitant to talk about sex with persons who were much older or younger than themselves, especially if they were relatives. This was perhaps the reason why friends figured as the most important source for family planning information and consultation for both the leaders and the non-leaders.

Opinion leaders on the average were in the older age groups. In fact, age was one of the important criteria for opinion leadership and people respected old age. We found that eight of the eighteen leaders were widowed at the time of our survey. Further, the wives of many opinion leaders were beyond the reproductive age group. These, we believe, were unfavourable factors for active co-operation and participation of the opinion leaders in family planning programmes. Perhaps these leaders felt that they were not directly affected by such programmes and that there was no real advantage to be gained by getting involved in these programmes. Thus, like caste and socio-economic status, age also channelized the pattern of communication along horizontal lines, being restricted to members of the same age group.

(iv) *Importance and dominance of the male*

Generally speaking, communication across sex lines, especially among non-relatives was rare in Mangalnagar village. Sex and family planning are considered to be taboo and therefore cannot be discussed openly between members of opposite sexes. Because of the dominance of the male and the subordinate position of the female in this village, the opinion leaders seldom communicate directly with village women, nor will the village women ever talk freely with the opinion leaders. We found that the opinion leaders never figure as an information source for family planning for the female respondents from this village. Likewise, the *dai* (village midwife) was never mentioned as a family planning information and consultation source by any of the male villagers. Our findings in Mangalnagar are supported by the Singur study which revealed that:

> It was necessary to form groups for discussion separately for males and females, the male groups to be addressed by the male workers and the female groups by the female workers. . . . In the case of men, it was found desirable to exclude young men from groups in which elderly men were present.[10]

Conclusion

Opinion leaders may be able to introduce innovations successfully under certain conditions and may fail when faced with different situations. In other words, the effectiveness of opinion leaders has to be examined under specific kinds of situations. In seeking effective opinion leaders for diffusion of innovations in rural India, we must consider various factors. First, the personality, skills and capabilities of the leaders; second, the nature of interaction that takes place between the opinion leaders and the non-leaders; third, the content of communication; and fourth, the social, structural and cultural characteristics of the community.

Effective communication strategies for family planning programmes must focus not only on the opinion leaders, but also on the process by which they communicate with other villagers and operate in the cultural milieu of their community. In Mangalnagar village, it appears that lack of communication between the opinion leaders and the villagers on matters of daily interest in general and on sexual and family planning matters in particular, was due to cultural norms regarding social stratification, deference for old age, respect for the male, female modesty and taboo on free discussion of sexual topics

Our findings support Bogue's statement that "a search for 'key' leaders . . . may be a search for a non-existent touchstone."[33] Efforts to isolate opinion leaders through the sociometric choice technique to help in programmes of family planning and fertility control may be misplaced. Much research needs to be done in this area. From our findings in Mangalnagar village it appears that a "two-step flow" approach for promoting family planning in rural India with the help of opinion leaders, under existing socio-cultural conditions, does not appear to be practical or advisable.

Summary

As a part of a larger anthropological research on rural communication networks, a study was undertaken in a north Indian village to assess the willingness and effectiveness of village opinion leaders as family planning promoters at the local level. Data revealed that the pattern of communication among both the opinion leaders and the villagers, particularly on topics pertaining to sex and family planning, was horizontal. Neither did the villagers look upon the opinion leaders, nor did the leaders consider themselves, as experts on family planning issues. A majority of the leaders were not interested in acting as local family planning agents Under the existing rural Indian socio-cultural milieu a "top-down-bottom" or a "two step flow" approach for family planning promotion does not appear practical.

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STATUS OF WOMEN AND FAMILY PLANNING IN INDIA

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In recent years, considerable attention has been focussed on the need for raising the status of women which is largely due to the awareness caused by the woman's movement in the West and partly as a result of the thinking of social scientists on this problem of world-wide concern. Resolution to improve the social status of women have been made to focuss the attention of both men and women to work together in the community for the progress of individual families and for the country. The United Nations General Assembly adopted a resolution in December 1972 to observe 1975 as International Woman's Year and to involve member countries, governmental and voluntary agencies, and citizens to achieve integration of women as equal partners with men in total developmental efforts as well as to remove any discrimination between the sexes. It is not reasonable to talk of economic, political, religious and philosophical developments without giving due status to women who constitute more than half of the world's population. It is a known fact and well recognised by all that unless the status of women improves no amount of family planning or of efforts made to solve the population problem will help.

The economically less developed areas of South Asia contain nearly two-thirds of the world's population with an annual growth rate of 2.7, while the growth rate in East Asia, which comprises of Oceania, China, Japan, Korea, Hongkong and Malaysia, is around 1.7%.

For planning programmes and to improve the status of women in general it will be necessary to know the socio-economic characteristics of women. This is true of any country particularly in the present context of Indian women. Some of the socio-economic characteristics of women are being collected regularly through decennial Indian censuses and this information will be of use before any programme for women is undertaken.

It is common experience that 105 to 106 boys are born as against 100 girls in almost all communities in the world. This excess of

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* Views expressed in this article are those of the author and do not necessarily reflect the views of Government of India.

males over females at birth gradually decreases as more males than females die so that between the ages of 30 and 50, the number of males to females is almost equal. In higher age groups, since a large proportion of males die and the population has more females than males, a greater number of women than men are found in countries like U.S.A. (98 per 100 women), United Kingdom (94), Poland (90) and Russia (83).

The sex ratio (expressed as number of females per 1000 males) has been declining from the decade 1901-11. This ratio which was 941 in 1961 has declined to 932 in 1971. There may be many reasons for this continuous decline in sex ratio. The main reason may be the higher mortality among females than males. The mortality in females upto 35 years is about 25-50 per cent higher than that of males. Generally, it is observed that infant mortality among women during their child-bearing period is still high in India as compared to other developing countries. Due to the declining trend in the sex ratio one may feel that it may raise the status of women. This is not a desirable phenomenon. Studies also indicate that the age at marriage for females is rising. In recent years, more and more women in urban India are seeking employment which restricts them for marrying early. The recent trend has been that unmarried women in the working class are increasing due to employment opportunities.

Women in modern India will have to play a double role of looking after the house, i.e., taking care of her husband and children as well as her work in the office. This dual role will have to be organised properly. In the West, unlike the Indian condition both men and women work and have equal opportunities. The first role mentioned above, i.e., looking after the children, the husband and the home are being managed by both husbands and wives in the West. In the under-developed and developing countries also, the pattern of both husband and wife seeking employment may be increased provided they have fewer children to look after. As a population control measure and also to see that the status of women is raised, it is imperative that women take up jobs. An economically active woman will not only add to the welfare of the family but will be less of a strain on society. For every male earning member in the family today, there are nearly 5-10 dependents. This has resulted not only in the reduction of our per capita income but has also added to the miseries of the individual family in particular and the community at large.

According to the 1971 Census, 80 per cent of our population lives in rural India. Most of the rural women are employed as agricultural labourers and others are self-employed as wives of farmers who look after their homes. Only 20 per cent reside in urban areas and can make serious efforts to find self-employment in organised ways. This necessitates that the women in the reproductive group should be free from the excessive burden of child bearing which will give them opportunities to participate in larger numbers in the economic, social and political fields. To bring about changes in the attitude of women in favour of small families, it is essential as a first step, to improve the educational status of women by giving them better education so that they can participate more fully and meaningfully in the social, political and economic development of the country.

Fertility among women may be moderated through their education, occupation and income, which factors have been considered as determinants of the status of women. The educational level of women has mostly been related to the occupation available to them, and education and occupation together have some influence on fertility. The age of the woman at marriage, her perception of the education of her children and her attitudes towards the small family norm, are all factors which affect fertility. Some researchers have made attempts to study the relationship between acceptance of family planning methods with the educational level, occupation and income of the wife. They have observed that education is strongly and inversely related to fertility A positive association has also been observed by some workers between income and fertility, and a negative association between educational level and fertility. The differences in fertility observed at the various educational levels are fast changing in the western countries whereas, many changes have been observed in this respect among developing countries.

The possible relationship between the female work participation rate and fertility has been studied by some workers but this relationship has not been well established due to various reasons such as the lack of definition of a "female worker", rural-urban differentials in work participation rates, etc. In countries like Thailand, great differentials have been observed between the work and familial roles of women which cause urban women to decrease their fertility whereas the rural female labour force has a minimal effect on fertility. This also has a direct bearing on the status which women enjoy in society. It is a necessary per-condition that for women to reduce their fertility, their employment outside their homes with incomes commensurate to the type of job they do is a must. Female employment has had a strong influence in raising the age at marriage. In more than one study it has been inferred that when both the husband and wife are educated, the use of contraceptives/acceptance of family planning methods is quite common. Also, the awareness of family planning increases directly with the educational level of the spouses. Besides, women with lower literacy or educational levels, and consequently having fewer employment opportunities outside their homes will experience the impact of excessive population growth to a greater extent.

The wastage rate worked out at the primary stage for the period 1964-65 shows that at the all India level, the wastage rate for girls is 64.7% as against 58.6% for boys, the overall rate being 60.8% (Table 1). The high wastage rate for girls is common in almost all the States except in Jammu & Kashmir and Uttar Pradesh where the wastage rates for the boys is slightly higher.

TABLE 1

Wastage at primary school stage—1964-65

States	Percentage of wastage		
	Boys	Girls	Total
Andhra Pradesh	68.6	74.2	70.8
Assam	70.2	74.4	71.9
Bihar	74.6	83.9	77.0
Gujarat	58.8	68.1	62.5
Jammu and Kashmir	49.1	38.5	47.0
Kerala	21.9	24.3	24.0
Madhya Pradesh	64.7	68.9	65.7
Madras	46.6	53.7	49.5
Maharashtra	46.5	61.7	52.8
Mysore	58.0	70.4	63.4
Nagaland	45.9	53.9	49.1
Orissa	76.2	87.6	80.3
Punjab	37.7	45.0	40.2
Rajasthan	65.5	69.9	66.4
Uttar Pradesh	50.0	46.4	49.2
West Bengal	68.7	75.2	71.3
All India	58.6	64.7	60.8

Source : *Education in India*, 1964-65, page 55

If one looks at the school enrolment figures for girls, it is seen that at the all India level girls constitute 37.25% of the total enrolment figures at the primary school level, 29.09% (VI-VIII) at the middle school level and 24.95% at the secondary stage. The declining trend in the percentages of girls enrolled in schools from the lower to the higher stages is common to all the States. (Table 2)

TABLE 2

Enrolment of girls in school

States	Percentage of girls to total enrolment figures		
	Primary (Std I-v)	Middle (Std vi-vii)	Secondary (Std. ix-xi)
Andhra Pradesh	38.94	28.43	23.24
Assam	39.14	35.30	29.61
Bihar	28.16	16.26	10.33
Gujarat	37.19	32.32	30.91
Haryana	27.72	21.08	20.15
Himachal Pradesh	37.72	25.58	22.80
Jammu and Kashmir	30.10	29.09	19.29
Kerala	47.21	45.85	46.39
Madhya Pradesh	28.27	22.91	19.44
Maharashtra	40.14	31.02	26.00
Mysore	42.67	33.11	27.42
Nagaland	35.71	31.57	25.00
Orissa	34.43	21.80	15.67
Punjab	40.32	32.76	32.85
Rajasthan	27.43	19.11	16.43
Tamil Nadu	43.16	35.00	32.13
Uttar Pradesh	36.75	19.41	17.76
West Bengal	36.84	32.43	24.48
All India	37.25	29.09	24.95

Source : *Education Statistics at a Glance, 1970* Statistics and Information Division, Ministry of Education and Social Welfare, Government of India.

According to the 1971 Census, the female population of India was 264,013,195 as against 283,936,614 males giving a total population of 547.9 million. The percentage literacy rate (excluding the 0-4 age group) has been estimated at 21.48% for females and 45.28% for males giving a total literacy rate of 33.84% for the country as a whole. The population in the age group 15-59 years accounted for 51.99% of the total population.

Since the inception of the family planning programme to date, 16% of the target couples have been currently protected. Out of these, nearly 5% of the couples i.e. females have been directly practising female-oriented methods. In order to achieve the desired target of reducing the birth rate to 30 per 1000 population by 1978-79, nearly 30-40% of the eligible couples will have to be protected by all methods of family planning. In this crucial aspect, the role of women cannot be ignored. It is our first and foremost duty to make them realise their responsibility in and outside their homes and also see that their status is raised in the economic, social and political fields. Unless this is done our task in controlling the population and also in improving the quality of life will not be very easy.

SEX EDUCATION AND THE NATIONAL FAMILY PLANNING PROGRAMME

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The influence of western culture is increasingly prevading present-day society. There have been an alarming crop of illegitimate and socially deprived children along with hundreds of illegal abortions during recent years. All these are due to new sexual trends towards greater liberty and experimentation, besides poverty and the absence of preventive measures such as sex education and specific information on birth control. The subject of sex education in underdeveloped or developing countries in particular, has been much neglected and talking about sex is regarded as taboo even to the present day. Parents, teachers, text-books and school courses, all avoid any mention of it.

Hence, unhappily, our younger generation, not emotionally mature enough for marital responsibilities and unaware of the damage they are doing to themselves, often get involved in premarital relationships which are responsible for the rising incidence of venereal disease among young adolescents. On the other hand, not only heterosexuality but also increased homosexuality has led to increased transmission and incidence of venereal disease among men.

To prevent these and other such problems, it is necessary to broaden the field of activities of our national family planning programme. The time has come for all our family planning centres to collect information about family life problems from both married couples and the unmarried persons they interview, so that we may soon have enough data, to start an integrated sex education and family planning programme. Such a comprehensive programme will enable us to prepare the next generation for a happier and fuller life, in keeping with our culture and tradition.

Sex education is more than the facts of reproduction. It is the building up of the character and personality of the child by way of his own nature and by facts concerning sex. Such education can have a wide scope in our national family planning programme. The majority of us are still ignorant of what sex education or education for family life means and how it can be utilised in our family planning programme. This comprehensive programme could include: a few talks to children on sex, a programme of education for "happy family life", a course in home management for girls, lectures on the family planning programme, for both adults and children, emphasizing the fact that uncontrolled procreation involves serious national and personal problems, etc.

What should be the objective of sex education in the family planning programme? Such education should start early in life and proceed in easy, progressive stages throughout one's life. Our youth should be instructed in the control of sexual impulses as this is responsible for individual behaviour and development. Correct knowledge and understanding of sexual matters should be imparted to children, depending on their age, so that when they grow up to adulthood, they will be prepared to accept the fact that a small limited family invariably produces better citizens, and that therefore, they should have a wholesome, positive attitude towards sexual behaviour, which is compatible with the demands of the society. This will consequently, also prevent the spread of venereal diseases, illegal abortions and illegimate children. Our young adults must be made aware of the fact that marriage is a unification not only of bodies but of ideas and ideals. The philosophy of "quality is better than quantity" should be acknowledged by both the spouses, who should plan the family according to their wage-earning capacity. Parents should be ingrained in the responsibilities of parenthood and the fact that ths responsibility can only be rendered well when they follow the doctrine of "planned parenthood". Hence, sex education as a part of the national family planning programme, will promote happier family relations.

Practice and Prospect

It is evident that educational activities with regard to school children, adolescents, teachers and parents have to be developed on a holistic approach where sexuality and family planning have to be integrated into all other fields of human activity. Sex should not to be regarded as a specific item but as an integral part of human life.

Uninformed individuals are often exploited and confused by commercial firms with their magazines containing nude and semi-nude pictures of women and stories of sex life in repulsive language.

A specific programme of sex education coupled with family planning is required to orient these uninformed individuals with regard to themselves and society, so that they will learn to evaluate the pressures within society, the objectives of their sexual drives, and the value of the propaganda made by commercial firms. Mass media like films, radio, television and sound books and articles communicating in a simple way, the emotional attitudes and correct behaviour patterns between men and women in marriage and outside it—will be the only answer for the community to provide.

The manner of imparting sex education depends on the individual's physical, emotional and social development. It is a continuous process of education and the form in which it is to be delivered differs from stage to stage and parents are the best educators on matters of family life. Unconsciously they educate their children by the way they behave towards each other and by their casual discussion of their neighbours' family matters like quarrels, divorces, etc. Unhappily, very few parents have the basic factual knowledge of responding correctly even to the child's question, from the time of the early erotic phases to sex and reproduction. Hence, as the child grows up—specially around puberty, that acute receptive stage of life—he is perplexed with new information and his earlier knowledge received from parents at home, about sex and reproduction which eventually leads to embarrasment.

This can only be solved by integrating sex education with the family planning programme where teaching on parent-craft and good home-making can be emphasized at the same time. This teaching will cover both the physical and emotional needs of the child, the process of socialization in the family and the establishment of a good parent-child relationship. Parents, through their own teaching, can convey a sound idea about sex and that a large family under conditions of poverty and malnutrition is inevitably connected with a high rate of infant mortality and a high incidence of disease and deformity among children. Hence, family planning combined with sex education is a vital step to progress in economic and social planning.

Next, our schools and Universities, are the best places where the gap created at home can be filled up. Schools and colleges should acceed to the needs of children by imparting biological, physiological and anatomical information in the course of regular scientific studies

Unfortunately, questions of emotional reactions, pleasures, happiness and other sociological aspects of the children and what they read are left untouched, and are rarely raised in the context of their lessons or activities. The school can ventilate the subject in a wholesome way through subjects like general science, civics, nature study and by means of audio-visual aids. Therefore, it is time for our Boards of Education and Universities to formulate comprehensive courses on family planning and sex education and introduce them in the regular curriculum for the training of teachers, doctors, nurses, and school and college children. Programmes for parents of prepubertal children and adolescents, couples engaged to be married and expectant mothers, also require to be drawn up.

A beginning has to be made by all our family planning and maternal and child health centres, and other organisations engaged in family planning work, towards establishing an adequate programme of sex education coupled with family planning so as to instil in the minds of all the people that small families oriented with sex education are invariably better placed and stand fairly good chances of acquiring the best qualities of ideal citizenhood.

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Figures in parentheses represent percentages.

KNOWLEDGE AND ATTITUDES OF MARRIED WOMEN TOWARDS MEDICAL TERMINATION OF PREGNANCY

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Abortion has always been a subject of interest if not of controversy. Perhaps, it is the only subject on which there is more "action" but hardly any formal "communication", as it is kept most secret. Termination of pregnancy has been recognised as one of the frequently used methods of population control. Countries which have shown a dramatic fall in their birth rates within a stipulated time have been known to use widespread abortion.

At the World Population Conference held in Bucharest in August 1974, the major reasons advanced by advocates of more liberal legislation in matters of abortion and especially of abortion on request involved a concern for public health (to combat illegal abortion with its associated morbidity and mortality), social justice (to give poor women access to abortions, previously available only to the well-to-do), and to secure a postulated right for all women to control their own bodies.[1]

In all societies and particularly in the less developed countries, the motivation and ability to deal with the established reality of pregnancy or the suspicion of pregnancy is much greater, and therefore, access to postconceptal means of birth control is imperative for adequate control of fertility.

It has been estimated that 30 million abortions occur every year in the world. In India alone, computations show that annually, six million abortions take place, out of which four million are induced and two million spontaneous.[2] A Gandhigram study[3] estimates that of every 100 conceptions 25 terminate in abortions (10 spontaneous, 13 induced and 2 still births). Considering this fact, and the great need felt by the people, the Indian Government enacted the "Medical Termination of Pregnancy (MTP) Act", in April 1971. Though the Act is meant primarily as a welfare measure to protect the health of women, it certainly supports and supplements the national family planning programme.

Between 1972-75, only 1.3% of the estimated 12 million abortions were performed in the country. Based on the national estimate, it has been calculated (on the basis of population), that about 2,00,000 abortions are being performed every year in Gujarat. During the last three years, however, only 9,154 MTPs were carried out. This is barely 1.51% of the estimated figure of 6,00,000 which might have been performed in that State during a three-year period. This fact prompted the authors to undertake a pilot study to find out the knowledge and attitudes of married women and the channels of communication regarding MTP, as no base-line data on these aspects is so far available.

Objectives

The specific objectives of this pilot study were:

(i) To assess the awareness of MTP among married women in the 15 to 45 age group,

(ii) To study the knowledge and attitudes to MTP of selected eligible rural and urban women,

(iii) To find out the existing communication channels for diffusion of information on MTP, and

(iv) To get suggestions from both rural and urban women for intensive education and publicity for MTP.

Methodology

Experienced Social Workers/Block Extension Educators (Sociologists) and Health Visitors were selected and oriented to administer a pre-tested schedule for data collection. The objectives, methodology and techniques to be employed for undertaking the field investigation work were explained to them in great detail.

A total of 150 urban and 300 rural married women from four areas of Rajkot city and six villages of Rajkot district respectively were interviewed. They were selected by the stratified sampling method. (The district was selected for this pilot study as it has shown mediocre family planning performance.) It is noteworthy that Rajkot, like other districts in Gujarat, has more or less a similar pattern of diffusion of information regarding MTP, i.e., through the health staff as well as mass media. Special care was taken to include a proper representation of the major urban and rural communities in the sample. This communication compares the results of the urban and rural studies.

General Characteristics of the Women

Of the 450 women, 415 (92.2%) were Hindus and 35 (7.8%) Muslims. Urban couples had, on an average, 3.65 children while in rural areas, the corresponding average was 3.67. The majority of rural and urban respondents were occupied in agricultural work/ labour (77.7%) and business and labour (80.7%), respectively.

Findings and Comments

Table 1 gives a distribution of the women by age. The majority (66%) were between 15 to 34 years of age i.e, in a period of high fertility.

TABLE 1

Distribution of married women by age

Residence	15-19 years	20-24 years	25-29 years	30-34 years	35-39 years	40-44 years	Total
Urban	1	23	25	38	32	30	150
Rural	7	53	69	81	68	22	300
Total	8	76	95	119	100	52	450
%	1.8	16.9	21.1	26.4	22.2	11.6	100%

Most of the urban and rural women were illiterate or had had only primary education (24.2%), though the urban samples had higher proportions of women at all educational levels (Table 2) than the rural sample.

TABLE 2

Distribution of the married women by educational level

Education at level	Urban	Rural	Total
Illiterate	59 (39.3)	224 (74.7)	283 (63)
Primary	60 (40)	49 (16.3)	109 (24.2)
Secondary	27 (18)	26 (8.7)	53 (11.8)
College	4 (2.7)	1 (0.3)	5 (1.0)
Total	150 (100)	300 (100)	450 (100)

Figures in parentheses represent percentages

Awareness of MTP

A high proportion of the rural (79.3%) and urban (54.7%) women had not heard about MTP, though half as many rural (20.70%) as urban women (44%) were aware of it. This means that even after a lapse of four and a half years since the MTP Act came into force, about four fifths or 80% of the rural women seemed to be ignorant about it.

TABLE 3

Sources of information

Sources	Urban	% out of 66	Rural	% out of 62	Total	% out of 128	% from 450 (total respondents)
Friends, relatives and neighbours	12	18.2	14	22.6	26	20.3	5.8
Health staff	34	51.5	37	59.7	71	55.5	15.8
Newspapers & other printed material	35	53.0	29	49.8	64	50.0	14.2
Radio	18	27.3	4	6 5	22	17.2	4.9
Doctors, leaders, or teachers	12	18.2	1	1 6	13	10 1	2.9
Others	4	6.1	0	0	4	3.1	0.9

The 128 women (66 urban, 62 rural) who were aware of the MTP Act, had received the information chiefly from health staff (55.5%), and newspapers and other printed material (50%). Probably this is because the specific task of popularising MTPs has been assigned to the health staff (extension educators, nurses, family planning health assistants etc.) and wide publicity through newspapers, and other publicity material on MTP has been done throughout the State by the State Family Planning Bureau, Gujarat.

This Table also reveals that only 13 of the 450 women (2.9%) had heard of the operation from doctors, community leaders and teachers who are considered as "change agents" and effective channels of communication of family planning and MTP.

Information on MTP

Less than a quarter of the respondents (38% urban; 19% rural) had some or very little information on MTP. Only 3.1% (6% urban;

1.7% rural) had complete information regarding the legislation. Though the urban women in the sample were better informed than their rural counterparts, the data clearly revealed that the information had not reached the majority (71.5%) of the women; 54.7% of the urban and 79.3% of rural women had not heard of the Act at all and 0.4% did not answer the question.

Only 17 (3.8%) respondents claimed to have some knowledge of abortions occurring in their localities. This lack of knowledge was higher in rural (96.7%) than in urban areas (95.3%).

Considering even a rather low estimate of 4,00,000 abortions per year, there will, on an average, be 6 to 7 cases of abortions per 1000 population. But, due to inhibitions and social fear, information of abortion cases is usually kept very confidential and a strict, self-imposed censorship on such news exists in our society. Perhaps, this might be the possible explanation for the respondents' very low level of knowledge regarding any abortion cases in their localities, though in reality, there might have been a sufficient number of such cases as per the widely accepted estimate of abortions mentioned above.

TABLE 4

Who performs the abortion

Abortion performed by	Urban	Rural	Total
Nurse	17 (11.3)	21 (7.0)	38 (8.4)
Dai	15 (10.0)	106 (35.3)	121 (26.9)
Quack	4 (2.7)	15 (5.0)	19 (4.2)
Unqualified doctor	86 (57.3)	37 (12.3)	123 (27.3)
*Qualified doctor	103 (68.7)	46 (15.3)	149 (33.1)
By self or with the help of relatives, laymen, etc. using indigenous medicine	14 (9.3)	31 (10.3)	45 (10.0)
Difficult to say or don't know	3 (2.0)	58 (19.3)	61 (13.6)
No reply	2 (1.3)	6 (2.0)	8 (1.8)

Figures in parentheses represent percentages.

* Qualified doctor means one with degrees such as M.B.B.S., L.C.P.S., and not necessarily doctors who have been registered under the MTP Act.

It was interesting to learn that most of the respondents were aware of the classes of persons who perform abortions (mostly illegal). This again supports the explanation given above.

In rural and urban areas the percentage of unqualified persons (90.6% and 66.6% respectively) was very high in comparision to the percentage of so-called (by the respondents) qualified persons (15.3% and 68.7% respectively) who perform abortions. In the rural areas, except for 15.3% who were qualified doctors, all others who performed abortions were unauthorised and unqualified persons like dais, unqualified doctors, nurses, etc.

The data indicated that only 33.8 (42% urban, 29.7% rural) of the married women favoured MTP while 47.2% (16.7% urban, 62.7% rural) were not in favour of it and 19.0% (41.3% urban, 4% rural) were indifferent. More urban women were in favour of MTP than rural women, probably because of the higher educational (2.4 times) level and greater awareness (2.1 times) among the former In comparison, rural husbands were observed to be about six times (44.7%) as indifferent on the issue than rural wives. It was also interesting to note that more rural wives (29 7%) were in favour of MTP than rural husbands (18.6%). There was not much difference in attitudes between urban husbands and urban wives (42.7% in favour, 14.6% against and 42.7% indifferent).

Only 17 of the 128 (13.3%) women who were aware of the liberalisation of abortion, claimed to have advised others to avail of MTP services. On an average, these 17 respondents advised 7.3 others in a year, to take advantage of the MTP legislation.

More urban women (7.3%) advised others to accept MTP than rural women (2.0%). This might be due to the greater awareness among urban (44%) than rural women (21%), as well as the comparatively higher educational level of the former.

Interpersonal Communication

Interpersonal communication on MTP was higher in the urban sample (35.3%) than in the rural (14.3%). On the whole, only 21.3% of the 450 women interviewed had discussed the subject with others, possibly because of a lower degree of awareness, a high rate of illiteracy and existing inhibitions in society (which might have also obstructed/prevented discussion on a person-to-person basis).

Of the 96 (53 urban, 43 rural) respondents who had discussed the MTP issue, the majority (65.6% rural: 56.6% urban) had such talks with the health personnel. In rural areas, this figure constituted 76.7% (as against 56.6% in urban areas), as there are a sizeable number of nurses and family planning workers in each Primary Health Centre in rural areas and all of them have been instructed to speak about MTP to eligible couples as part of their duties. This is also the explanation for the results given in Table 4 which reveal that the health staff was the main source (55.5%) of diffusion of information on MTP.

It is interesting to note that in urban areas 32% of the wives who said that they discussed MTP had discussed it with their husbands. In rural areas, only one woman (2.3%), out of 43 who said they discussed the subject, had ventured to discuss the topic with her spouse. The probable explanation for negligible interspouse communication among rural couples may be attributed to several factors including high illiteracy, socio-cultural background, etc. This might be supported by our field observations that the rural husband and wife hardly talk with one another about sensitive subjects like sex or abortion though they do act on them. Friends and relatives constituted 21.9% (13.3% urban, 8.5% rural) of the persons with whom these 96 women had discussed MTP while 26.6% and 16.3% of the urban and rural wives respectively had discussed it with neighbours.

After being informed that the abortion law has been liberalised since the last four years and that now women can legally resort to abortions, the respondents were asked whether they thought such a procedure as beneficial. Most of the women (59.3% urban 54% rural) thought that MTP is beneficial while 44.2% (40.7% urban, 46% rural) did not think so. This might be due to their unfavourable or indifferent attitude towards MTP.

TABLE 5

A comparison of rural and urban women with favourable/unfavourable attitudes with those who think MTP is beneficial/otherwise after being informed of its liberalisation

Questions	Yes		Total	No.		Total
	Urban	Rural		Urban	Rural	
Is MTP beneficial ?	59.3%	54.0%	55.8%	40.7%	46.0%	44.2%
Are yon in favour of MTP ?	42.0%	29.7%	33.8%	58.0%	70.3%	66.2%
Increase/Decrease	+17.3%	+24.3%	+22.0%	—17.3%	—24.3%	—22.0%

It was very interesting to note that more respondents (55.8%) considered the MTP Act to be beneficial to women after being told of its liberalisation, than favoured it (33.8%). This was more noticeable among the rural women. It is very natural that women who have a favourable attitude towards the operation will positively think it to be beneficial. Nevertheless, it is noteworthy that of 66.2% of the women who did not favour the operation (47.2%) or had an indifferent attitude (19%), 22% considered it beneficial when they learnt about its legalisation. This means that due to illiteracy, ignorance, existing inhibitions and/or the social stigma attached to abortions, only 33.8% of the women favoured MTP, but the present circumstances and felt need of preventing the pregnancy might force them to think that MTP is beneficial (55.8%). This influence might not be so strong in the remaining 40.2% of the women as in the 22% who thought the operation to be beneficial though their attitude was unfavourable or indifferent.

TABLE 6

Reasons for considering MTP as beneficial

Reasons	Urban	% out of 89	Rural	% out of 162	Total	% out of 251
Economic	60	67.4	40	24.7	100	39.8
Better education & nutrition for children	37	41.6	18	11.1	55	21.9
Better housing	15	16.9	0	0 0	15	6.0
Better health	37	41.6	15	9.3	52	20.7
Social	34	38.2	96	59.3	130	51.8
Others	3	3.4	23	14.2	26	10.5

The main reasons for considering the Act as beneficial were social (51.8%) and economic (19.8%). In fact, the first two reasons in Table 6 are also mainly economic.

Of the major reasons given by rural wives who have did not consider MTP as beneficial were that it was a sin (68 8%) to have an abortion. This could be due to the religious and socio-cultural background which is more pronounced in rural India as a result of illiteracy, misconceptions, poverty and orthodoxy. Only 18% of their urban counterparts equated an abortion with "sin", their chief reason for considering it non-beneficial being that it constituted a danger to health (77% urban, 15.2% rural). Also, 34.4% of the urban and 22.5% of the rural wives thought MTP to be unethical.

The 251 women (89 urban and 162 rural) who considered MTP as beneficial were asked to offer suggestions for disseminating information on MTP, urban women had more suggestions (191) to offer than rural women (166), with an average of 2.1 suggestions per urban woman which was twice that of her rural sister (1.0)

TABLE 7

Categorisation of suggestions for MTP education and publicity

Suggestions	Urban	% from 89	Rural	% from 162	Total	% from 251
Individual contacts	60	67 4	51	31.5	111	44.2
Meetings	19	21.4	30	18 5	49	19.5
Radio	10	11.2	36	22.2	46	18.3
Films	35	39.3	10	6.2	45	17.9
General publicity	33	37.1	21	13.0	54	21.5
Newspapers	34	38 2	8	4 9	42	16.7
Doctors & leaders should inform	0	0.0	10	6.2	10	4.0

Table 7 categorises the suggestions received from the 251 respondents. The majority who thought that MTP was beneficial, suggested the use of individual contacts for promoting the measure. Group meetings and mass media such as the radio, films, newspapers and general publicity were also mentioned. Another important suggestion was that doctors and leaders should be motivated to diffuse information on MTP as they have a high standing in the community they live in.

Is abortion a woman's right?

About a third of the women (39.3% urban, 30% rural) thought that access to abortion constituted the right of a woman while 38% (43.4% urban, 36% rural) were indifferent and unable to resolve the issue. About 28.7% of the women said that women should not have the right to obtain an abortion, the proportion of rural women who thought thus, being almost twice (34%) that of urban women (17.3%). The majority of the women (66.7%) however expressed a negative opinion or were indifferent to the issue possibly because most of them are so backward, ignorant and illiterate that they may not be in a position to think properly about their own rights or even to realise the need for their emancipation.

Suggestions

(1) This pilot study establishes the need for launching a nationwide, intensive educational and publicity programme on MTP by utilising all available mass media and mobilising health personnel. Several actions in this respect have already been taken by the State Family Planning Bureau of Gujarat. "The Action Plan for Intensive Education & Publicity Drive on MTP" prepared by the State Family Planning Bureau, Gujarat, is now in the implementation stage. It may provide tested methodology and a strategy for launching an intensive, nationwide MTP drive.

(2) It is also imperative that the maximum number of MTP service centres and medical practitioners in rural and urban areas be recognised by relaxing the present conditions immediately.

(3) It is high time that the health authorities thought of setting up targets and awards for MTP performance.

(4) MTP services should be free of charge, irrespective of income, in all recognised Government and Municipal institutions (hospitals, maternity homes, clinics, primary health centres and dispensaries).

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A FOLLOW-UP STUDY OF IUD CASES IN FOUR HOUSING COLONIES OF GREATER BOMBAY

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Introduction

The intra-uterine device (IUD), an effective one-time, reversible method for spacing births, was officially introduced in India about a decade ago. It was ushered in with the avowed objective of making it acceptable on a very large scale. However, necessary and adequate follow-up requirements for the device were not properly visualised. Consequently, the acceptance of the device which was very encouraging in the initial years, marked a declining trend owing to complaints and complications which received inadequate follow-up services.

This communication is a follow-up study of 1,624 women who accepted the IUD under the FPAI Headquarters' programme in Bombay during 1972-74. The women belonged to four housing colonies of Greater Bombay where FPAI conducts regular educational and clinical service programmes.

The study aimed at (i) categorising and analysing the IUD acceptors by their socio-economic background and its impact on family size, occupation, etc., (ii) studying the demographic and other relevant characteristics of the acceptors and relating them meaningfully with one another, and (iii) determining the termination (event-wise) and continuation rates per 100 first insertions of the 27.5 mm IUD and 30 mm IUD, and relating them, if possible, with the aggregate months of protection offered.

Of the 1,624 cases only 1,611 are incorporated in this analysis as complete information was not available for 13 cases. Of these 1,611 insertions, 674 (41.84%) were done during 1972-73 and 937 (58.16%) during 1973-74.

Results and discussion

The socio-economic and demographic characteristics of the IUD acceptors are given in the following paragraphs:

Monthly family income

Based on their monthly family income, the IUD acceptors were arbitrarily classified into three groups : a lower income group, with a monthly family income upto Rs 499/-, a middle income group with earnings of Rs. 500/- to Rs. 799/- per month, and a higher income group with a family income of Rs. 800/- and above.

According to this classification, a sizeable proportion of the acceptors (80.5%) came from the lower income group and only 14.65% and 3.97% from the middle and higher income groups respectively. (This information was not available in 0.8% of the cases.) The average monthly family income of the IUD users worked out to Rs. 368.03.

Family size, income and desire for additional children

No significant difference in the average number of living children was noticed between the three income groups. Nevertheless, it can be stated that the average number of living children apparently bore an inverse relationship with the income level (Table 1), with an average of 2 62 living children. Almost half the number of acceptors (51.35%) did not wish to have any more children while the rest (48 65%) could not give a definite answer when asked whether they wanted more children. A positive association between rising income levels and the proportion of IUD acceptors who did not want more children, and a concomitant decline in those who could not definitely decide on an increment to their existing family size was evident

TABLE 1

Family size and desire for more children by income

Income group	Percentage of acceptors	Average number of living children	IUD Acceptors	
			Not desiring more children	Not definite about wanting more children
Lower (upto Rs. 499)	80.51	2 67	49.58	50.42
Middle (Rs. 500-799)	14.65	2.34	59.16	40.84
Higher (Above Rs. 800)	3.97	2.26	73.19	26.09
All groups	99.13*	2.62	51 35	48.65

* Information not available from 0 87% of acceptors

Educational and occupational background

A distribution of the IUD acceptors by their educational status showed that 78.46% were literate, though a significant percentage had not reached higher levels of education (Table 2). The occupational background showed that a remarkably high proportion (87.65%) were housewives while those who were in service, business and agricultural landless labour, together formed only 5.71% of the acceptors. Only 4.8% were in service and this can be attributed to the finding that only 5.65% of the acceptors had received college education.

TABLE 2

IUD acceptors by education and income

Educational level	Percentage of acceptors	Average monthly family income (in rupees)
Illiterate	20.23	265.70
Primary	11.86	302.90
Secondary	40.97	352.55
Matriculation	19.92	462.63
College	5.65	641.81

Age

It was observed that about 77% of the acceptors were below 29 years of age. Of these, 37.62% were between 25 and 29; 31.78% between 20 and 24 and 2.17% were between 15 to 19 years of age. The 30-34 and 35-39 age groups comprised respectively of 19.93% and 6.95% of the acceptors. The mean age of the acceptors was 27.09 years, confirming the fact that most of them belonged to the younger age groups. Those aged 40 and above numbered 1.36%. This is a favourable sign, as these women have almost reached the end of their reproductive period (women of age 40 and above do not contribute as such to fertility) and the family planning programme aims at making the potential younger couples accept one or the other family planning method.

Contraceptive practice prior to IUD insertion

Data on the practice of family planning methods by the IUD acceptors prior to the insertion of the device revealed that out of the 1,611 IUD cases, 37.18% had used one or the other family planning method, before accepting the IUD though 27.25% of the acceptors had not been practising contraception prior to insertion. No information on previous contraceptive use was available in 35.57% of the cases. The main pre-insertion methods used were condoms (by 23.15%) and oral contraceptive pills (5.59%) which are comparatively easy to use and less complicated. The withdrawal and rhythm method were each used by 0.06% of the acceptors prior to insertion, while 0.12% used the jelly, 0.44% foam tablets, 0.19% the diaphragm and 7.57% relied on other methods of contraception.

Average number of living children, coital frequency and pregnancy among pre-insertion contraceptive users and non-users

Coital frequency was found to be slightly higher among pre-insertion contraceptive users (5.18 contacts per month) than among pre-insertion non-users (5.10). The average number of pregnancies which occurred as well as the average number of living children were also slightly more among pre-insertion contraceptive non-users (2.90 and 2.73 respectively) than users (2.80 and 2.65 respectively).

The use of contraceptives prior to IUD insertion thus helped in lowering the pregnancy rate and led to a lower average of living children.

Age at consummation and average number of living children

An analysis of the age at consummation and average number of living children showed the expected correlation between the two in that the number of living children increased with declining age at consummation. Under cetirus paribus, a lower age at consummation means a longer reproductive span and therefore enables women to have more children. The mean age at consummation was 18.90 years.

Sex of living children and desire for additional children

Table 3 shows that an increase in the number of daughters was accompanied by a decline in the percentage of IUD acceptors who desired more children and an increasing trend in the percentage of acceptors who did not wish for additional children. It may be concluded that the fear of having another daughter and preference for a son (sex preference) may have existed. Some acceptors did not definitely answer this question and their proportion too declined with an increase in the number of daughters, the only exception being where there were three or more daughters. This may be due to the fact that these persons had fewer sons on an average (0.98) than those who had one or two daughters. This too could be attributed to the preference for a male child.

TABLE 3

Number of daughters against sons and desire for more children

Number of daughters	Average number of sons	Percentage distribution of IUD acceptors		
		Desiring more children	Not desiring more children	Did not express desire for more children
0	1.64	26.29	31.71	42.00
1	1.28	16.72	42.77	40.51
2	1.24	13.87	53.47	32.66
3 +	0.98	9.01	54.50	36.49

Active users

Table 4 gives a distribution of the IUD users by the size of the IUD. The term "active users" represents those women who continued to use the IUD as of the cut-off date (31st March 1974) and had had no event since the first insertion. The events included IUD insertions terminated by accidental pregnancy, expulsion and removal.

TABLE 4

Distribution of active users, drop-outs and 'lost to follow-up' by size of IUD

IUD size	Active IUD users	Events (drop-outs)	Lost to follow-up	Total acceptors
25 mm.	1 (25.0)	3 (750)	—	4
27.5 mm.	693 (70.5)	289 (29.4)	(10.1)	983
30 mm.	417 (76.5)	128 (23.5)	—	545
Size unspecified	58 (73.4)	21 (26.6)	—	79
All sizes	1,169 (72.6)	441 (27.4)	1 (0.06)	1,611

Figures in parentheses represent percentages.

The group "lost to follow-up" included women three or more months overdue for a scheduled visit but from whom no information was obtained by any type of communication.

As of the cut-off date, 72.56% were active users and 27.38% were exposed to events. The 30 mm IUD had a high continuation rate (76.51% of active users) while the highest number of events were recorded with the 27.5 mm IUD. The 25 mm IUD cases have not been considered for the purpose of comparison as their number is too insignificant. Only a single case was lost to follow-up.

Net cumulative rate of events per 100 first insertions

Owing to paucity of information (either the insertion date or the termination date, or both were not available for some IUD cases), 1,486 IUD cases out of 1,611 were taken for computation of the net cumulative rate of events.

The termination rates for the 100 first insertions at the end of the first year as well as at the end of the second year were higher with the 27.5 mm IUD than with the 30 mm IUD. The increase in the total termination rate and the termination rate due to removals of the 27.5 mm IUD at the end of the second year was also greater than that observed with the 30 mm IUD. Thus, it may be said that our patients preferred the 30 mm IUD to the 27.5 mm IUD.*

There were no terminations due to the occurrence of pregnancy and "loop unknown" in the 30 mm IUD group, though the 27.5 mm IUD showed termination rates of 0.13 and 0.68 due to accidental pregnancy, at the end of the first and second years of use respectively.

The expulsion rate of the 27.5 mm IUD was 0.34 at the end of the first year and 1.55 at the end of the second year. In contrast, the 30 mm IUD which had an expulsion rate of 'nil' at the end of the first year showed a rate of 2.21 at the end of the second year; indicating that the increase in the net cumulative rate of expulsion of the 30 mm IUD at the end of the second year was greater than that of the 27.5 mm device.

The termination rates for all the events were higher for the 27.5 mm IUD (Tables 5 and 6). It may thus be concluded that as the complaints, complications and side-effects were more with the use of the 27.5 mm IUD; more 27.5 mm IUD acceptors discontinued its use and switched over to other methods than did the 30 mm IUD acceptors.

Of all the events, termination rates due to medical reasons were higher for both sizes of the device. It may be worthwhile for medical researchers to explore and find out the various causes responsible for the removal of IUDs due to medical reasons. The termination rate for both sizes increased more than twice (from 14.90 to

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* Agarwala, S. N., *Eugenics Quarterly*, 15(1):41, 1968, also concluded that the 30 mm IUD was preferable as the gross drop-out rate of the 27.5 mm device worked out to be higher.

TABLE 5

Net cumulative rate of events per 100 first insertions at the end of first year by size of IUD

Events	27 5 mm. IUD			30 mm. IUD			All sizes*		
	Net cumul rate	95% confidence limits		Net cumul rate	95% confidence limits		Net cumul. rate	95% confidence limits	
		Lower	Upper		Lower	Upper		Lower	Upper
1. Occurrence of pregnancy and loop unknown	0.13	0.0033	0.73	—	—	—	0.08	0.0020	0.45
2. Expulsion	0.34	0.07	0.99	0.00	0 00	0.87	0.22	0.05	0.64
Removovals due to :									
(a) Pain and/or bleeding	1.03	0.47	1.95	0.65	0.14	1.89	0.92	0.41	1.43
(b) Changed to other method	3 35	2.08	4.62	2.80	1.21	4.39	3.06	2.10	4.02
(c) Medical reasons†	12.28	9.93	14.63	8.45	5.75	11.15	10.68	5.08	16.28
(d) Personal reasons‡	0.97	0.43	1.90	2.39	1.15	4.37	1.44	0.77	2.11
(e) Planning pregnancy	0.33	0.07	0.96	1.20	0.38	2.78	0.61	0.27	1.20
3. Removals (a+b +c+d+e)	17.96	15.24	20.68	15.49	11.98	18.99	16.71	14.61	18.81
Total terminations (1+2+3)	18.43	15.68	21.18	15.49	11.98	18.99	17.01	14.90	19.12
Continuation rate	81.57	77.28	85.86	84.51	79.71	89.31	82.99	79.92	86.06

The procedure for computation was that of Tietze, C and Lewit, S in

* All sizes includes 27 5 mm , 30 mm and IUDs of unspecified size

† Medical reasons include cramps, backache spotting, pelvic inflammation perforation or on any other medical advice

‡ Personal reasons include objections from husband, loss of confidence in method fear of cancer/disease or on acceptors request without explanation

TABLE 6

Net cumulative rate of events per 100 first insertions at the end of the second year by size of IUD

Events	27 5 mm. IUD			30 mm. IUD			All sizes*		
	Net cumul. rate	95% confidence limits		Net cumul rate	95% confidence limits		Net cumul rate	95% confidence limits	
		Lower	Upper		Lower	Upper		Lower	Upper
1. Occurrence of pregnancy and IUD unknown	0.68	0.08	2.45	—	—	—	0.37	0.04	1.33
2. Expulsion	1.55	0.57	3.36	2.21	0.60	5.64	1.96	0.79	3.13
Removals due to :									
(a) Pain and/or bleeding	3.52	1.79	5.25	7.27	3.34	13.74	4.76	2.94	6.58
(b) Changed to other method	7.50	0.06	9.94	5.18	2.80	7.56	7.33	5.41	9.25
(c) Medical reasons	2.11	0.95	3.27	4.70	15.03	24.76	30.20	26.77	33.63
(d) Personal reasons	35.58	31.08	40.08	19.95	2.40	7 00	2 92	1.85	3.99
(e) planning pregnancy	0 57	0.15	1.45	2.52	1 11	0.94	1.21	0.52	1.90
3. Removals (a+b +c+d+e)	49.28	44.64	53.92	39.63	33.65	45.61	46.42	42.72	50.12
Total terminations (1+2+3)	51.51	56.17	46.85	41.83	35.75	47.91	48.75	45.02	52.48
Continuation rate	48.49	45.83	51.15	58.17	54.44	61.90	51.25	49.13	53.37

48.75) by the end of the second year giving a continuation rate of 51.25 for the 100 first insertions.

Aggregate months of protection

Table 7 provides information on the aggregate months of protection (retention period) given by the device against the occurrence of pregnancy. The aggregate months of protection were computed for the total IUD acceptors as well as for the active users (the reference date for computational work being 31st March 1974), and for those who were exposed to events. Acceptors of all sizes of the device were protected for a period of 9.72 months from conception. Those who were exposed to events were protected for 6.04 months while active users (up to the reference date) recorded a protection period of 10.84 months.

TABLE 7

Average retention period by size of IUD

Size of IUD	Average retention period in months		
	For active users	For events (drop-outs)	For all accep'ors
27.5 mm	11.45	5.53	9.97
30 mm.	9.93	6.86	9.25
All sizes	10.84	6.04	9.72

The 25 mm IUD has not been considered in the above table as there were very few cases

The 27.5 mm IUD acceptors who experienced events had lesser aggregate months of use (5.53 months) than the 30 mm group (6.86 months) because of the higher termination rate of the former.

Conclusion

Even now, the IUD remains a very effective, one-time, cheap, reversible and reliable contraceptive method. In a developing country like India, with high illiteracy and a low standard of living, people cannot be expected either to visit family planning clinics regularly for the renewal of supplies, or to use a method which requires regular use like oral contraceptive pills, foam tablets, etc. In such situations, the IUD will, therefore, serve as a dependable method if it is popularised and reinstated on a large scale especially through good follow-up services.

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NEWS & NOTES

GENERAL CONFERENCE OF IUSSP

The International Union for the Scientific Study of Population (IUSSP) will hold its XVIII General Conference in Mexico City from 8th to 13th August, 1977.

The Conference will have two Plenary Sessions—one on "Population and socio-economic development" which will immediately follow the opening ceremony, and the second on "Human rights, ideology and population policies" which will precede the closing ceremony. The rest of the programme will be divided into 27 formal sessions, a number of informal sessions and some side meetings.

The formal sessions will discuss subjects like fertility, nuptiality and family, mortality, population and economics, migration and urbanisation, population policies, population growth, family planning and abortion, data and methods of analysis, population genetics, and a session on miscellaneous presentations. The informal sessions will cover a wide range of topics from the stages in the settlement of continents to the effects of warfare on demographic variables.

Persons wishing to take part can obtain further information by writing to: Bruno Remiche, Executive Secretary, International Union for the Scientific Study of Population, Rue Forgeur, 5, 4000 Liege, Belgium.

FAMILY HEALTH IN BANGLADESH

Dr. Zafrullah Chowdhury, Director of the People's Health Centre in Nayarhat, Dacca District of Bangladesh, produces regular progress reports on its multiple activities covering all aspects of development of basic health services, health insurance schemes, vocational training and education. The latest report covering the period July 1973 to April 1974 refers among items to the family planning programme carried out by the Centre. The relevant extract from the report is given hereunder:

"Over the past 18 months, we have supplied a total of 1,881 women with contraceptive pills. In March 1974, 1,026 women in over 100 different villages received their monthly cycle pills, and of these, 350 have been on the pill for six months or more.

"Most of our clients have several children already. However, out of 88 new recruits in March, nine had only one or two children, and two had none. This suggests that we are having some success with persuading young mothers to start birth control before their family becomes burdensome.

"A weekly clinic is held by the FP organizer and her doctor husband. They examine for side-effects and other troubles connected with the pill. Many of the complaints are due to a change of pill. These symptoms usually subside after three months or so on the pill. But often clients are unwilling to endure them for so long, and prefer to drop out. Because of superstition or unconscious reservations about FP, women often ascribe unconnected complaints, e.g., peptic ulcers and gastritis, to the pill."

Improved supply lowers drop-out rate

"Although the improved method of supply has curbed the previous high drop-out rate, many women still stop FP after only a few months. There is a significant difference between the drop-our rate for women supplied directly from the Centre (over six months, 257 out of 607 dropped out, i.e. 42%), and for those supplied by their own village FP counsellors (82 out of 339, i.e. 26%). This shows the efficacy of working through members of the village community, who are close at hand and trusted by the FP clients.

"In the past months, we have had much trouble securing the pills. . . . As an added complication, the brand of pill supplied keeps changing. Increased side effects and accidental pregnancies have resulted from this mixture, and sometimes we feel our trusting clients are being treated as guinea-pigs.

"We charge the Government's price of TK 0.25 per cycle (USA $0.02. This is an important point of policy. The charge, however small, shows that we are delivering a service wanted by the women, and not forcing a programme on them for our own satisfaction. That there is a growing awareness of the need for family planning is proved by the black-market price for cycles of the pill, reported to be as much as TK 11 per cycle in some places. Proprietary birth control medicines are also being touted in the bazaars, some of them claiming to have long-term effects.

"Long-term protection from pregnancy is what some of our older clients have been demanding. As we had expected, after some time on the pill, during which they become accustomed to the idea of birth control, many women become motivated to accepted a more permanent method. So far, the pill has been our sole method. But the need for repeated supply and constant supervision, its side-effects and the possibility of accidental pregnancies, is unsatisfactory in the long run, despite its advantage of beng easily acceptable as "medicine". Several of our pill clients have become pregnant because of mistakes in consumption. One, who had been 15 months on the pill, angrily demanded a refund of her money; another threatened to leave the unwanted baby on our doorstep. Both wanted abortions. Inquiries show that many women would gladly accept a long-acting injection. Depo-Provera is an obvious choice, and thanks to our Dutch support group, we have enough of it to carry out a controlled study. But Depo-Provera is exceedingly expensive (about TK 100 per shot). . . ."

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FAMILY PLANNING IN THE PEOPLE'S REPUBLIC OF CHINA

SMT. AVABAI B. WADIA

(President, Family Planning Association of India)

China today judges itself by two major milestones—the Liberation which occurred in 1949 with the end of the Chiang Kai Shek regime and, even more so, from the Great Proletarian Cultural Revolution of 1966. At the same time, the latter upheaval also marked a sharp political division between Chairman Mao and his one-time close associate and Vice-Chairman, Lin Piao, and Liu Shao Chi who had been advocating another line of development considered to be "revisionist", and where certain ideas of profits, incentives, specialisation, importation of outside technology, etc. played a part. And in every commune, factory, neighbourhood group, school or health centre that we visited, the "criticism" of Lin Piao and Liu Shao Chi was specifically made by all the spokesmen. In fact, even small children repeated this "criticism". Thus, Mao's line of "proletarian politics in command" is very much in evidence. At the same time, the emphasis given to the "criticism" would go to show that the issues are extremely live and that the pure "continuous revolution" line of Mao and the divergences advocated by the "capitalist roaders" are no idle theories but that an ideological tussle is going on.

It is necessary to appreciate the politicisation of all life and work in today's China, where Marxist-Leninist-Mao-Tse-Tung Thought is expected to permeate every aspect of life and all development and planning hinges on the fulfilment of these political aims. It is in this general context that even a matter like family planning must be considered. For political, economic and cultural factors are totally intertwined and health and family planning, in turn, are integrated into this greater whole.

We were a group of 16 family planning workers from 11 countries of Asia, Africa and Latin America, sponsored by the International Planned Parenthood Federation, with Mr. B. Aluvihare as the leader, and our chief interest was the family planning programme in China. Since the last few years, much has been published about this programme, some of it after observation, and some deductive only. The Chinese themselves do not make it a point to write particularly about family planning. In fact, Chinese literature hardly exists on this subject, except that sometimes medical journals deal with it. They take it for granted now as a part of planned development. Family planning is regarded as one of the essential measures to promote national construction and Mao has asked the people to practise it. This is being done by "raising the consciousness" of the people, linked with "criticising the erroneous doctrines of Lin Piao and Liu Shao Chi" and "relying on the masses" that is, the workers, peasants and soldiers (belonging to the People's Liberation Army).

Planned development, it is stressed, involves planned population growth. In areas of high growth rates, birth control is part and parcel of socialist construction and equally, in sparsely inhabited areas where the fifty or so national minorities who altogether make up just about 5% of the total population, more children are welcomed. Also, help for infertile couples is a part of the family planning programme.

All-China statistics are not given nor, apparently, considered very significant. But local figures are available and very specific.

Seven major factors for success

There are at least seven major factors which play a significant role in helping to make family planning a successful measure:

(1) There is an extensive and intensive educational effort to popularise the small family norm. Chairman Mao's words to plan the birth of children gives rise to a whole gamut of reasons for birth planning and the benefits it brings. This is conveyed through exhibitions, meetings, big letter wall posters and other messages.

(2) The upholding by Mao and the Party of the equality of women and, therefore, the exhortation to criticise the three erroneous points of Confucius. At a distance from outside China, it sounds very odd to criticise someone who died more than 2,000 years ago. But in this particular context it makes sense, for Confucius had averred that men were superior to women; that a man must leave posterity—meaning sons only and not daughters; and that he should strive to make his son an "official". It is emphasised that these three fallacies are inimical to modern socialist construction, for women "hold up half the sky"; and "women can do whatever a man could do." Therefore, a remarkable revolution in the status of women is today visible in China. They are emancipated politically, economically, and culturally and have equal rights and duties, although, as yet, they are not represented in equal numbers in the highest political organs. They are doing productive labour and have the energy, health—and small families—conducive to this.

(3) The Chinese Constitution upholds that "He who does not work

neither shall he eat" and practically all able-bodied men and women are provided with some kind of employment. Work and jobs are not available according to personal predilections or choices, but according to the country's needs and they may involve leaving home for long periods. The hard work, the obligation to study and to produce for the country, the possible separation of husband and wife for a time, the independence of women brought about by earning their own living, the constant reiteration that men and women are equal and must respect each other, tend to erase the old traditional attitudes of wishing to have large families. In fact, it was asserted in several places that "the masses desire family planning."

(4) The positive encouragement of late marriages is also effective in reducing family size. The age of 23 to 24 and above for girls, and 27 to 28 and above for boys, is not only encouraged but actually practised. The 1950 Marriage Law has specified minimum limits of 18 and 21 but the general practice far exceeds these.

Late marriages are considered particularly beneficial to women, who then can study, work, contribute to the country and be independent. In accordance with these objectives, encouragement is also given to men to marry and go to live in the house of the wife and her parents if any, instead of the wife having to go to his home. Other factors influencing later marriages are low wages for young apprentices, and housing shortages.

As a corollary to employment of both men and women, the three-in-one formula of family life is much favoured, namely the grandparents, parents and children living together, with the parents working, the children learning and the grandparents who are often retired, looking after the children. This way everyone has something to do and is useful.

(5) Almost universal primary education has practically eliminated illiteracy and larger numbers than ever of men and women can read and study for themselves, and understand national policies.

(6) The easy availability to married couples of several methods of family planning from which a choice can be made, is helpful in popularising family planning. The pill, IUD, monthly injections, condoms, sterilisation (both male and female) and abortion, are available free of charge.

(7) The expansion of medical facilities recently, especially in the rural areas, in which the Barefoot Doctor is the key person, has enabled family planning to penetrate these areas. The Barefoot Doctor, man or woman, who springs from among the workers or

peasants, is one who has completed middle school, served for a period of two years in field or factory, and then has been selected for training (from six months to one year) as a para-medical worker. He or she can give first aid and help people with simple treatment, preventive and curative. An important duty is to advise on family planning and to provide contraceptives and advice on their use, and act as a link with hospital services where needed as, for example, when a sterilisation is required. At the same time they have to continue doing labour for about half their working time. There are over a million Barefoot Doctors and about three million health assistants.

Organisational Network

Organisationally, the political and administrative network is utilised to bring advice and assistance in family planning to all married couples in the fertile age groups. Mass mobilisation is thus possible. The organs of political and administrative control, right from the People's Congress and Central Committee of the Communist Party, and the State Councils in the Provinces, to the Revolutionary Committees at the Municipal, Commune and Production Brigade levels with the corresponding Party Groups, down to the neighbourhood and factory Committees and Production Teams, all have a family planning committee or a "responsible member" in charge of family planning. These people are not mere talkers or cheer leaders, but actively engaged in motivation and promotion of family planning. They see to it that the message reaches every fertile couple within their own sphere. A noteworthy feature of the family planning committee at the State Council level is the fact that it consists of Vice-Ministers from all the ministries or departments and not just that of health.

These committees and persons stress the importance and benefits of birth planning as a part of the overall objective of socialist construction and not only contraception, but the equality of women and late marriages are an integral part of such motivational programmes. Thus, family planning education and services are the responsibility of the local people for their local groups. Broken down into small local units, it is easy to know the family sizes of all those belonging to such Production Teams or neighbourhood or factory Committees, and motivation can be focussed personally and strongly on couples to observe the small family norm.

There appear to be no incentives in the family planning programme, and birth planning is done because it ought to be done. However, effective disincentives can be said to permeate the programme, indirectly at least. Time and again, it was affirmed that family planning is a voluntary measure, and its success is dependent on educating the people about it. The favoured size of family is two children, whatever their sex. It was explained, however, that in spite of the criticism of Confucius and his fallacies, some couples did hanker after a son and they might have a third child if the first two were girls, and it was a matter of their choice. It was stated that those with three or more children generally belonged to the 40 plus age groups, while younger parents were content to have two. If a couple had more than two, they were "criticised" in their local units, and this social pressure from peer groups is apparently highly effective. It was asserted that while larger families were not penalised (in keeping with the voluntary nature of the programme) such parents penalised themselves, by adding to the number of their dependants who had to be supported on their wages or work points which depended on the labour they put in. The almost complete integration of politics, economics, culture and other measures into a total system based on Marxist-Leninist-Mao-Tse-Tung Thought provides compelling reasons not to deviate but to have small sized families of two children instead of the five sons and two daughters previously considered desirable.

Some Results

The results of the drive for family planning are probably variable in different parts of such a large country. However, in the areas visited by our group the results were universally high.

In Shanghai (population 10.5 million) it was stated that 85% of the fertile couples practice family planning, that its birth rate is 9.19 per thousand and death rate 5.83 and that the population growth rate is 3.36 per thousand.

We visited a Commune near Chenchow, on the banks of the notorious Yellow River (China's "river of sorrow" for the floods it used to bring) where extensive cultivated lands show the courage and hard work of the people against tremendous odds. The Commune has a population of 22,000 divided into 12 Production Brigades and 88 Production Teams, and recently there has been great progress in economic development. They informed us that last year 326 babies were born in the area and the birth rate was less than 15 per thousand. Families with two or three children form about 70% of the population and the rest were either infertile couples or those who had more children. Vasectomy or tubectomy had been undertaken by 20% of the couples.

In a textile factory in the same area, with 6,000 workers, half of whom were women workers, 90% of those married practised family planning. But modestly, the Vice-Chairman of the Revolutionary Committee in this factory thought they could do better. He said that all Comrades have contact with family planning in their daily lives. The birth rate among the workers was about 10 per thousand. Abortions were about 30 last year and condoms, 1UDs and pills were in use. The average age of marriage was 24 for girls and 26 for boys. There were several workshops in the factory and each had a family planning group; each of the three shifts had a family planning worker and in each Production Team there were some voluntary workers as well for family planning. The Revolutionary Committee and Party Group of the factory also had special family planning committees. All were very active in motivation. The women and their infants got regular health check-ups and treatment, for the equality of women was not allowed to over-ride their particular needs. Maternity leave of 56 days (or more if medically needed) was available in factories. Breast-feeding time was allowed, and if a grand parent was not available, the baby could be left in a creche, whether the mother was on a day or night shift.

In historic Sian (population 2,500,000), we visited a primary school where family planning among the teachers provided interesting data. The spokesman who was a responsible member of the School Revolutionary Committee, said, "Family planning is known to every household in China—since we develop in a planned way, we practice family planning and have late marriages. We do propaganda on the benefits and significance of family planning among the teachers and if they have more children they are criticised for their Confucian ideas. Thus, their consciousness is raised and on their own accord, they want no more. There is no third birth among our teachers. To facilitate work we have set up a leading group of three for family planning—the Chairman of the Revolutionary Committee of the school, and two teachers. The age of marriage among them usually exceeds 24 and 26. Out of 41 teachers, 10 have had IUD or sterilisation. The rest have pills or injections." This school had 16 classes and 850 students.

The famous People's Commune of Tachai in Hsiyang County, Shansi Province, where the work done by the poor peasants over a period of years in reclaiming badly eroded land, improving agricultural output and creating a better life for themselves, while at the same time working in strict conformity with Marxist-Leninist-Mao-Tse-Tung Thought, has been held up as a shining example all over China. Thousands of peasants and others are brought to visit it. The Production Brigade has 83 families (450 people), of whom 160 men and women are the able-bodied workers. Here too, family planning work was moving space. We saw the agricultural work in Tachai and also visited the 36-bedded commune hospital whose administrative head is one of the peasant workers, with a woman doctor in charge, and 18 medical workers including doctors and nurses. There are 40 Barefoot Doctors for the whole Commune and currently, a training course was going on for 10 Barefoot Doctors. A girl Barefoot Doctor we met had had medical training for one year, after leaving senior middle school and doing two years of work labouring in the fields. She was in charge of family planning also and did propaganda, distributed pills, inserted IUDs (for which she had been given a month's training) and sent those needing sterilisation to the hospital. She said the people accepted family planning readily. Twenty per cent of the fertile women had been sterilised. In a neighbouring Brigade which was following Mao's exhortation to "learn from Tachai" (and had switched over from the Lin Piao, Liu Shao Chi line) we learned that 95% of fertile couples were practising family planning, the number of fertile women being 242. The IUD was the most popular method here, with pills and injections (once or twice a month injection). Only four abortions had taken place in the last year, and after two children, sterilisation is mostly chosen. It was also mentioned that family planning was practised assiduously by the Party Group and Revolutionary Committee members.

In yet another setting, this time in Peking itself, in the Hopingli Neighbourhood, we visited the Shin Hua Sidi Residents Committee members and saw a better-off home, and the Health Centre run by the Production Unit. Here, older people were giving their services and, as one spritely old lady of 74 said, this wards off all the aches and pains and illnesses that overtake the idle old! This "Red Medical Workers Centre" was set up in September 1970 and, as propagated by the Cultural Revolution, mass prevention and treatment were aimed at. Environmental hygiene was high on the list (as indeed, everywhere else) and other preventive work—innoculations etc. and home visiting of the sick, was also done. The benefits of family planning were vigorously propagated as also that of late marriage, which would enable study and promote production. The District Hospital sent its doctors three times a week to this Centre to work and also gain field experience, and the four old stalwarts had also taken some short training, the better to carry out "serving the people wholeheartedly".

At this Health Centre, there were 477 fertile couples. They were all practising family planning. In 1975, 16 babies had been born Pills, IUD, condom, were popular and also the monthly or twice-monthly injection, which is another form of the pill formula. Sterilisations and IUD insertions were done at the hospital.

As the Vice-Chairman of the Neighbourhood Revolutionary Committee told us: "Our Chairman Mao points out that human beings should control themselves. We carry out these ideas to improve our work concerning family planning. Our Party, Government, and Revolutionary Committees pay special attention to family planning. From top to bottom we have organised family planning. There is a family planning leading group under the Neighbourhood Revolutionary Committee here and it is responsible for this work in this area, under its department for environmental hygiene and family planning. Such a group exists in the Residents' Committee also.

"What is important is to educate the masses about family planning. When we educate them, their ideological consciousness is raised and with it the significance of family planning, and they have a better understanding of Chairman Mao's instructions on family planning. And when they get educated, it is not for reducing population but to engage in socialist construction and make the country progress. Such construction is developed in a planned way and so must family planning. Secondly, the masses understand that family planning is very good for them. Since quite a large number of women in China are participating in construction and work, family planning helps to emancipate housewives. It is conducive to raising their cultural and educational level and for studying politics. Also, it is very important to educate children and rear them healthily. When we explain all this to the masses they understand and do family planning. There are two aspects to this work—firstly, to educate the young, unmarried people to have late marriages because they are anxious to get knowledge and it is not so good to get married early. Presently girls of 25 and boys of 27-28 years get married. As to your question on education in sex and marriage, we do have lessons in human physiology in middle school classes. Secondly, married couples are educated to have children later, and to space the second child after about 4 years".

There is little doubt that family planning is a measure that receives the utmost priority in China and through the potent process of "criticism" and other practical pressures, conformity to the small family norm is increasingly ensured. As the older generation phases out, the two-child family will become the overwhelmingly normal family size in China, and thus help in stabilising the population growth rate which, at present, is said to have come down to about 1.9 per cent per annum, or an addition of about 15.2 million people every year.

A FUTURE PERSPECTIVE OF FAMILY PLANNING PERFORMANCE IN INDIA: (1975–1985)*

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Introduction

The gap between the birth and death rates in India has been steadily increasing over the years since 1951. Consequently, the high growth rate of the vast Indian population has become a major handicap in the attainment of the desired level of socio-economic development, even as far as in maintaining the minimal standards of living for the people. In view of the spectacular decline in its death rate during the past, an urgent need has been felt to bring down the birth rate very rapidly because it would not only check the growth of the Indian population but also lessen the gravity of pressures arising from shortages in food and housing and of increasing demands for more educational and employment facilities in the future. The Government of India has, therefore, rightly expressed its concern for reducing the national birth rate to the level of 25 per thousand population by the end of 1984.

The efforts of the national family planning programme have not borne the desired results so far. As a consequence of this failure, the earlier target of reducing the birth rate to the level of 25 per thousand population by the end of 1978-79 had to be modified as mentioned above. Against the Fourth Plan targets of 15 million sterilisations, 6.6 million IUD acceptors and 10.0 million conventional contraceptive users, the actual achievement was 10, 2.4 and 4.1 millions respectively. The Fourth Plan had set a target of protecting a cumulative total of 28 million couples but the actual achievement was only 19 million couples. By now, since its inception only about 15 per cent of the couples in the reproductive age group have been currently protected due to the family planning programme. In the light of these figures, one may rightly be concerned in speculating the required performance in terms of the various methods of family planning so as to attain the targets set by 1984. Notwithstanding the past failures of the programme and the adequacy of available time, one may perhaps lay out copious methods of achieving the above target. It might be desirable in this context to examine whether it can be possible to achieve the target by reducing the birth rate annually in a particular fashion. Would the manner of the desired decline in the birth rate affect the population size at the end of the period under consideration? The present paper is an attempt to study some of these aspects and thereby to work out some feasible annual targets for each family planning method in order to achieve a birth rate of 25 at the end of 1984.

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Methodology

For obtaining the annual targets for the various family planning methods, population projections were made regarding the mortality and fertility components of population growth, assuming migration to be nil. Secondly, the total number of couples to be protected was calculated methodwise for each year, after obtaining the number of births to be averted annually in order to get the desired decline in the birth rate. Finally, from these currently protected women, fresh targets for each method were worked out.

Population Projection

According to an estimate of the Office of the Registrar General of India, the birth rate of India was about 35.5 per thousand population in 1974. For our calculations, we assumed a birth rate of 35 as on March 1, 1975. This might be an underestimate. So that a further decline in the birth rate should occur, after 1975, it is essential that more than 15 percent of the couples in the reproductive age group should be currently protected. If this percentage increases, a consequent decline of a similar order might ensue in the birth rate. To obtain a particular decline in the birth rate at any future date the proportion of fertile couples to be currently protected in any one year, was accomplished through the following steps:

(a) The age-sex distribution of the projected Indian population on March 1, 1975 was obtained by interpolating the projected figures of Raghavachary[3] (Medium 2). This was taken as the base year population for the purpose of projection.

(b) In order to keep the birth rate at 35 a general fertility rate of 162 was taken. It was also assumed that 15 percent of the couples in the reproductive age group should continue to be currently protected in order to keep the birth rate at a constant level of 35.

(c) Following Raghavachary, the mortality level for the future was assumed as under:

	Year	1975-80	1980-85
e_o^o	Females	52.55	55.30
	Males	53.77	56.02

(d) Population projections were made by treating the birth rate at a constant level of 35 and then assuming that

(I) the birth rate would decline by one point every year so as to reach a level of 24 by the beginning of 1985 from the level of 35 at the beginning of 1975.

(II) the birth rate declines every year by 0.5 for the first three consecutive years, by one point for the next four years and by 1.5 points for the last three years.

(e) The projected populations under the declining fertility were obtained from projected populations obtained under constant fertility assumptions by following the procedure given below:

$$P^c_{76} = \left(P_{77} - B^A_{75} \cdot P^{75}_B \right)$$

$$P^c_{77} = \left(P_{77} - B^A_{76} \cdot S^{76}_B - B^A_{75} \cdot S^{75}_B \cdot S^{76}_1 \right)$$

$$P^c_{85} = \left(P_{85} - B^A_{84} . S^{84}_B - B^A_{83} . S^{83}_B . S^{84}_1 \ldots\ldots \right.$$

$$\left. - B^A_{75} S^{75}_B \cdot S^{76}_1 \ldots\ldots S^{84}_9 \right)$$

where

P^c_t = Population (corrected) for the year 't' under an assumption of declining fertility.

P_t = Population for the year 't' under an assumption of constant fertility.

B^A_t = Births to be averted in year 't' in order to get the reduction in the birth rate as desired under assumptions I or II.

S^t_B = Survival ratio at birth in year 't'

S^t_x = Survival ratio at age 'x'

Table 1 gives the projected population for assumptions I and II under the declining fertility levels along with the number of births to be averted annually in order to get the desired decline.

TABLE 1

Projected populations and number of births to be averted annually under assumptions I and II of declining fertility

Year	Projected Population (in '000)			Births to be averted* (in '000)	
	Constant Fertility	Declining Fertility Assumption I	Declining Fertility Assumption II	Assumption I	Assumption II
1975	593836	593836	593836	593.8	296.9
1976	607769	607247	607508	1214.5	607.5
1977	621703	620119	613791	1860.4	920.7
1978	636636	632434	634046	2529.7	1268.1
1979	649569	644172	646886	3220.8	1940.7
1980	663503	655317	659144	3931.9	2636.6
1981	680365	668778	673695	4881.5	3368.5
1982	697227	681595	687613	5452.8	4469.5
1983	714088	693748	701347	6243.7	5610.8
1984	730950	705229	713315	7052.3	6776.5
1985	747812	716003	723509	—	—

* These are the births to be averted in addition to those required to maintain (fifteen percent of couples to be currently protected every year) the birth rate at 35.

Number of Couples to be Currently Protected

Estimates of the methodwise annual performance under assumptions I and II were obtained by the following steps:

By assuming that 180 couples per thousand population need to be protected, the total number of couples to be currently protected to maintain a constant proportion of 15 percent throughout the period of projection was worked out on the basis of the population projections under constant fertility. On the basis of past family planning performance and the estimates of the couples currently protected by different methods of family planning, the number currently protected was apportioned annually to sterilisation, IUD and conventional contraceptive users in the proportion of 0.67,0.19 and 0.14 respectively.[4] A review of the past performance and the contribution of the various methods to the annual cumulative number of births averted (already obtained as in Table 1) indicated that an average of 64% of the total births were averted by sterilisations, 26% by IUD insertions and 10% by conventional contraceptive use. Again, the number of births averted in a particular year by any one method of family planning bears a functional relationship with the number of couples currently protected by that method. On examining the past trends of these series it was found that about five couples required to be protected currently by sterilisation so as to save one birth (cumulative). The corresponding figures for IUD and conventional contraceptive users were 3 and 7 respectively.[6] However, keeping in view the effectiveness of the various methods of family planning, the corresponding figures for the first year (not cumulative) were assumed to be slightly higher, e.g., 6, 5 and 7 respectively.

Annual Methodwise Performance

We have already obtained the number of couples who need to be currently protected by the various methods. In order to express the currently protected couples in terms of methodwise performance, we have weighed the currently protected women methodwise as below :

$$P_s^t = \left(CP_s^t - 95.\, CP_s^{t} - {}^{1}\right) \text{ x } \frac{1}{.95}$$

$$P_I^t = \left(CP_I^t - .\,95.\, CP_I^{t-1}\right) \text{ x } .\, \frac{1}{87}$$

$$P_c^t = \left(CP_c^t\right) \text{ x } \frac{1}{.60}$$

where, P_s^t is the number of sterilisations to be done in the year 't'.

are CP_s^t is the number of couples currently protected due to sterilisations, in year 't'.

Subscripts I and C stand for IUD and conventional contraceptives respectively.

The above procedure of converting the number of couples protected into the number of acceptors of each method for individual years was adopted for a 15 per cent segment of couples which was considered essential in order to keep the birth rate constant. Also, annual achievements would be required only in this order to bridge the gap created due to any annual attrition in this percentage occurring as a result of drop-outs, deaths, divorce or ageing. For another set of couples to be protected so as to bring down the birth rate as laid down under assumptions I and II, the above procedure beginning with the second year of the projection period, was used. For the first year, as indicated earlier, the births averted were directly converted into couples to be protected methodwise in 1975-76, so as to bring down the birth rate by following the different conversion factors.

After obtaining the total number of couples to be protected each year by the various methods, the corresponding figures for sterilisation, IUD acceptors and conventional contraceptive users were inflated by the reverse of their effectiveness, 0.95, 0.87 and 0.60 respectively, to obtain the annual performance figures.

Another method of getting these figures might have been to work out a feasible mix of methods so that the desired number of births to be averted annually could be achieved. This could have been possibly derived from the age distribution of the couples accepting the various methods of family planning each year. This approach has been adopted by Seal[7] in one of his recent papers in which he suggests that in order to achieve a birth rate of 25 by the end of 1984, about 45% of the couples in the reproductive age group will have to be currently protected.

Results

Table 1 indicates that the size of the Indian population is minimum under assumption I of declining fertility. This implies that it is not only the reduction of the birth rate which is important but also the manner in which it could be achieved for the sake of a viable population policy. In order to arrest the size of the population much earlier, we may have to aim at a greater reduction in the birth rate in the beginning of the period, rather than later. However, in reality, much would depend on the resources available to fulfil the required methodwise targets set for every year.

According to our calculations a set of probable annual achievements would be as given in Table 2. According to the estimate of the Department of Family Planning, Ministry of Health and Family Planning, the number of sterilisation acceptors, IUD acceptors and conventional contraceptive users was respectively, about 2.19, 0.49 and 2.35 millions for 1971-72 and 3.12, 0.35 and 2.32 millions for 1972-73. The required achievement as shown in Table 2 certainly calls for greater effort to get more and more acceptors annually to bring the birth rate down to the desired level.

The number of acceptors of sterilisation, IUD and conventional contraceptives per thousand population, for each year from 1975 to 1985, is given in Table 3.

TABLE 2

Yearwise performance for different methods of family planning under assumptions I and II

Year	Achievement in millions					
	Assumption I			Assumption II		
	Sterilisation	IUD	C C	Sterilisation	IUD	C C.
1975-76	3.20	1.03	4.5	2.00	0.680	4.2
1976-77	2.60	0.49	5.0	1.69	0.368	4.3
1977-78	3.18	0.882	5.8	1.96	0.557	4.7
1978-79	3.38	0.936	6.8	2.14	0.605	5.2
1979-80	3.58	0.989	7.6	3.31	0.916	6.1
1980-81	3.78	1.042	8.5	3.51	0.971	7.1
1981-82	4.10	1.130	9.5	3.82	1.055	8.0
1982-83	4.31	1.187	10.5	5.20	1.423	9.4
1983-84	4.52	1.244	11.5	5.53	1.514	10.8
1984-85	4.73	1.299	12.6	5.82	1.591	12.3

TABLE 3

Yearwise performance for different methods of family planning per thousand population

Year	Assumption I			Assumption II		
	Sterilisation	IUD	C C.	Sterilisation	IUD	C C.
1975-76	5.38	1.73	7.50	3.36	1.14	7.00
1976-77	4.28	0.81	8.35	2.78	0.61	7.17
1977-78	5.13	1.42	9.52	3.19	0.90	7.65
1978-79	5.34	1.48	10.69	3.37	0.95	8.20
1979-80	5.56	1.53	11.85	5.10	1.41	9.42
1980-81	5.76	1.59	13.06	5.32	1.48	10.75
1981-82	6.13	1.68	14.25	5.66	1.56	11.87
1982-83	6.32	1.74	15.45	7.55	2.06	13.67
1983-84	6.52	1.79	16.60	7.88	2.15	15.39
1984-85	6.70	1.84	17.90	8.16	2.23	17.24

Source : Obtained from Tables 1 and 2.

Since the inception of the programme only 15 per cent of couples in the reproductive age group have been currently protected. In order to reduce the birth rate to 25 by 1984, about 46% of the couples need to be protected. The magnitude of the task to be accomplished in just ten years by the Indian family planning programme is apparent and it can be achieved only by sustained and vigorous efforts of a similar magnitude, as can be seen from Table 4.

TABLE 4

Percentage distribution of couples to be currently protected by all methods (combined) under assumptions I and II

Year	Assumption I		Assumption II	
	Total number of couples to be currently protected (in '000s)	Percentage to total couples in the reproductive age groups	Total number of couples to be currently protected	Percentage to the total couples in the reproductive age group
1975-76	21570.5	20.18	19988.5	18.70
1976-77	24655.1	22.57	21358.1	19.52
1977-78	28576.7	25.50	23472.7	20.97
1978-79	32625.9	28.50	25773.2	22.53
1979-80	36793.4	31.50	29839.8	25.52
1980-81	41069.0	34.40	34033.9	28.50
1981-82	45645.3	37.30	38513.7	31.40
1982-83	50335.2	40.10	44994.3	35.90
1983-84	55131.8	42.90	51694.2	40.20
1984-85	60024.0	45.60	58526.0	44.50

Table 4 reveals that the family planning programme will have to make energetic efforts to currently protect about 34—35 per cent of the couples of childbearing ages so as to achieve a reduction of the birth rate to 30 or so. It may be easy to achieve partial success in the beginning but increasing this by a further 15% within the next five years will be still more difficult. To reach 45% of couples within ten years, from a level of 15% of couples protected, will certainly not be a simple task. It does not however, imply that the programme is not feasible as we may see from Table 5 that by the end of 1984 we may have a large portion of target couples to be covered by the family planning programme.

Table 5 shows that the eligibility for sterilisation is of the extent of over 47% of the fertile couples whereas, the proportion of currently protected couples by all methods is hardly 46%. It suggests that more and more couples from among those who have three or

TABLE 5

Number of couples by composition of living children in 1984-85

Couples	Number of couples in reproductive age group (in '000s)	Percentage of total couples* in reproductive age	Our recommended method of family planning
1. With three or more children of whom at least one is a son	62364.67	47.4	Sterilisation
2. With two children of which at least one is son	19209.37	14.6	IUD/CC
3. With more than two daughters	2762.99	2.1	CC/IUD
4. With one son or two daughters	17367.37	13.2	CC
5. With one daughter or no child	29866.63 29866.63	27.7	No need for Family Planning
Total	131571.03	100.100	

* Operations Research Group, Baroda, *Family Planning Practices in India*, 1973.

more children, of which at least one is a son, can be motivated for sterilisation. Similarly, couples belonging to other groups may be persuaded to accept either IUDs or conventional contraceptives.

Concluding Remarks

This study is only illustrative in nature and brings out the magnitude of the task to be accomplished by the family planning programme in order to achieve its target of reducing the birth rate to 25 per thousand population by the end of 1984. The achievements during the past three years have been praiseworthy and a declining trend in the national birth rate has been observed. By way of long experimentation, by now, a large infra-structure exists for making supplies and services available and for spreading mass extension education services. The integration of family planning services with those of health, maternal and child care, and nutrition with the help of multipurpose workers is no doubt a benchmark in the direction of making efforts for meeting the needs of the couples whom these workers might contact. What is needed more urgently is to generate a wave of social change which in turn would bring changes in the attitude of eligible couples, in favour of small families and thereby, a demand for the various services provided under the family planning programme.

India cannot wait for economic development and an increase in the level of so called education for bringing about the consequent decline in fertility. Let us not too often change emphasis on certain aspects of the family planning programme without giving a fair trial to them. It is good that abortion has been liberalised in the country and it might prove to be an effective supplement to the main programme in the long run.

The population of our country has to stop increasing at some point or the other. This is now both a physical and a social necessity. No development programme can succeed without a successful check on population growth. The success of family planning in the future would largely determine the economic prospects of our country. Unfortunately, the experience of the past does not hold promise of the achievements of our goal so easily unless something drastic is planned. But, so far, our efforts had been concentrated in urban areas. Therefore, there is enough scope to motivate young couples in rural areas to appreciate the benefits of a small family and therefore demand family planning services. The motivational work has therefore to be planned on a massive scale. Let doctors, social scientists, economists, industrialists, social workers, demographers and political leaders work hand in hand for making this programme a success, or we shall be left with a choice between coercion for the acceptance of family planning and the catastrophe of a population explosion and its consequent miseries. The future success of the family planning programme in India calls for the raising of an army of committed, dedicated and satisfied workers who are primarily responsible for promoting its cause.

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A COMPARATIVE STUDY OF POST-ABORTION STERILISATIONS WITH GENERAL STERILISATIONS

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The demographic, socio-economic and cultural characteristics of tubectomy acceptors have been studied in detail by several authors. However, so far, no attempt seems to have been made to compare the characteristics of the acceptors of post-abortion sterilisation with those of postpartum and non-postpartum sterilisations.

The postpartum programme of the Government of India[1] estimates direct and indirect acceptors by pooling the obstetric and abortion cases. The characteristics of these acceptors are thus not analysed individually. Women who have had abortions, legal or illegal, induced or spontaneous, form a selective group. The characteristics of sterilisation acceptors drawn from this group may not, therefore, be the same as those of women accepting a sterilisation which is not associated with an abortion. It was therefore, considered of interest to compare the demographic and social characteristics of the acceptors of post-abortion sterilisation with those of postpartum and non-postpartum sterilisations. In addition, this paper also discusses certain other characteristics of post-abortion sterilisation acceptors.

Study Population

The relevant data for the study were collected from the inpatient records furnished by member CMAI Hospitals. During 1972, member hospitals of the CMAI Family Planning Project reported 7,394 abortion cases of all types among which 729 or 9.9% accepted sterilisation soon after abortion.[2] Out of the 89,659 deliveries recorded during the period, 21,757 or 24.3% accepted sterilisation during the postpartum period. Obstetric and abortion cases thus, together accounted for 23 sterilisations per 100 pregnancies admitted.

Out of 81 member institutions which reported post-abortion sterilisations, only 23 institutions (28.4%) could furnish their in-patient records. Further, of the 729 post-abortion sterilisation cases, data in the form of in-patient charts was available for only 223 cases or 30.6% of the cases. An equal number of sterilisation cases not performed soon after an abortion, were selected at random for purposes of comparison from the respective hospitals. Thus, this analysis is confined to 223 post-abortion and 223 general (other than post-abortion) sterilisation cases.

Findings

Demographic characteristics

The percentage distribution of the two groups of acceptors by age and mean number of living children is presented in Table 1.

TABLE 1

Distribution of women by age and mean living children

Age group (years)	General sterilisation group		Post-abortion sterilisation group	
	Percentage of acceptors	Mean no of living children	Percentage of acceptors	Mean no of living children
20-24	20.18	2.8	7.17	2.8
25-29	34.98	3.6	21.52	3.6
30-34	27.35	4.2	32.29	4.3
35-39	13.45	4.6	24.22	4.8
40-44	4.04	5.0	13.00	5.3
45+	—		1.35	5.3
N.S.	—		0.45	—
Total	100.00 (223)		100.00 (223)	
Median age (years)	29.26		33.30	

Non-post-abortion sterilisation was accepted by more women in the high fertility group of 25-29 years, while the majority of post-abortion sterilisation acceptors were between 30-34 years of age. A similar trend prevailed among the higher age groups also, with the proportion of acceptors aged 30 and above being significantly higher in the post-abortion group ($p<.01$). The mean age of the acceptors of post-abortion sterilisation was higher—32.9 years as against 29.3 years among their counterparts in the general sterilisation group, the median ages of the acceptors being 33.3 and 29.3 years respectively for the two groups. The post-abortion sterilisation group had 4.3 mean living children as against 3.8 children among the general sterilisation group, though no significant difference was observed.

Age at marriage and duration of married life

The median age at marriage for post-abortion sterilisation acceptors was 15.6 years as against 16.1 for the general sterilisation group. Sterilisation as a permanent method of family planning was resorted to at an earlier stage in their married lives by the latter (11.5 years) while the former opted for it a little later i.e. after 16.5 years of marriage (Table 2). Another significant finding was that almost 38.6% accepted sterilisation in the general sterilisation group within 5-9 years of married life; the corresponding percentage among the post-abortion acceptors being only 10.8. The number of acceptors of post-abortion sterilisation increased with the duration of married life unlike that of the general sterilisation group.

TABLE 2

Distribution of women by duration of married life

Duration of married life (years)	General sterilisation group Percentage (N=223)	Post-abortion sterilisation group Percentage (N=223)
0-4	2.24	—
5-9	38.57	10.76
10-14	28.70	28.70
15-19	16.59	28.70
20-24	10.31	20.18
25-29	9.90	6.73
30	0.45	0.90
N.S.	2.24	4.03
Total	100.00	100.00

Table 3 shows the number of living children of these two groups of women. It was observed that 51% of the women in the general sterilisation group accepted the terminal method when they had three or less living children as against 30% among the post-abortion acceptors. The median number of living children for the two groups of acceptors, as mentioned earlier, were 4.3 and 4.7 respectively.

TABLE 3

Distribution of women by living children

No of living children	General sterilisation group Percentage (N=223)	Post-abortion sterilisation group Percentage (N=223)
1	—	1.35
2	12.55	6.73
3	38.12	22.87
4	21.97	25.56
5	12.56	15.69
6+	14.80	27.80
Total	100.00	100.00
Median no. of living children	4.25	4.73

Births averted

The number of births prevented due to the post-abortion or general sterilisations has been computed as per the methodology evolved by the Department of Family Planning, Government of India[3]. A post-abortion sterilisation could prevent 1.84 births as against 2.52 births averted by a sterilisation* operation which was not preceeded by an abortion. This difference was a result of the higher age range of the post-abortion sterilisation acceptors (the median age was 33.3 years for this group as against 29.3 for the general sterilisation group).

Educational status and other social characteristics

Over half (59.2%) of the post-abortion sterilisation acceptors were illiterate while 43.5% of the women in the general sterilisation group had received no education. Women who had studied upto the 5th class constituted 23.8% of the post-abortion sterilisation acceptors as against 26.9% in the general sterilisation category. The educational level was considerably higher among the latter group at all levels, especially among those who had studied between the 6th and 10th classes (22.42% and 13.90% respectively) and college level (3.59% and 0.45% respectively). As many as 3.58% and 2.69% of the acceptors in the post-abortion and general sterilisation groups respectively, did not state their educational status. The statistical significance test revealed that illiterate women were more likely to resort to post-abortion sterilisation.

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* The general sterilisation cases are those other than the post-abortion sterilisation cases.

Previous practice of contraception

Previous practice of contraception and the methods used by the "ever users" are shown in Table 4. A majority of the women in both groups did not practice contraception before accepting a tubectomy. The corresponding percentages of "never users" were 91.03% and 88.79% for the general sterilisation and the post-abortion sterilisation acceptors respectively. About 11% of the post-abortion acceptors had practised contraception before accepting sterilisation as against 9% in the general sterilisation group. The predominant method used by both groups of acceptors (4.9%) was the IUD.

TABLE 4

Distribution of women by previous practice of contraception

Previous method used	General sterilisation group Percentage (N=223)	Post-abortion sterilisation group Percentage (N=223)
Condoms	—	0.90
Oral Pills	4.04	2.24
IUD	4.93	4.93
Other methods	—	3.14
Nil	91.03	88.79
Total	100.00	100.00

Discussion

The foregoing observations indicate that acceptors of sterilisation coupled with an abortion form an older age group with high parity and greater number of living children, than those accepting only a sterilisation. The former acceptors had not only married at an early age but were sterilised later than the women in the general group, thereby indicating that these women had enjoyed a longer period of married life than their counterparts, even though the number of women who had practised contraception before the operation was more in the group of post-abortion sterilisation acceptors. The longer duration of active married life nullified the impact of contraceptive use, which was not regular, and as a result, the post-abortion acceptors produced a larger number of living children than the general group.

Further, the very fact that the post-abortion acceptors had a higher age distribution than their counterparts, indicates that the impact of sterilisation on the abortees does not appear to be really effective in reducing the fertility span. The number of births prevented per sterilisation was 1.84 among the post-abortion acceptors as against 2.52 for the general group.

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CHILD LOSS EXPERIENCE IN A RURAL AREA

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Introduction

Child loss is one of the intervening variables between fertility and contraception. The decision to accept contraception depends more on the number of children living than the number of children ever born. Rates of child loss effect the demographic situation as well as the psychological milieu of couples and cultures vis-a-vis fertility regulation.

Little attention has been paid to the study of mortality in India, particularly with reference to death of children other than infants. Studies have usually been confined to infant mortality rates, crude death rates and disease specific death rates. The death of the older child is more traumatic an experience than the death of the infant and thus of greater influence on the attitudes relative to fertility planning.

Keeping the above in mind, an attempt has been made in this paper to study child mortality rates with respect to different variables viz., age of mother, religion and caste, education and occupation of husband, birth order and closed birth intervals.

Description of Study Area

The data used in this study derives from the Rural Family Planning Project at the Allahabad Agricultural Institute. The project is sponsored by the Family Planning Association of India and commenced operations in the year 1971. It covers a rural population of 160,043 (in 1971) spread over 499 villages of different sizes in the southern part of Allahabad district. The population density is 209 persons per square kilometer as compared to the all India figure of 182[1]. This area lags considerably behind the rest of the country in per capita income and other economic indices. It is also an area of high fertility and general resistance to family planning. A further description is available in other publications[2].

Methodology

A baseline survey was conducted as one of the first prerequisites of the project to determine the baseline parameters and family planning aspects which could be used for programme planning, monitoring and final evaluation.

The household constituted the sampling unit for collecting demographic data. Fertility and child mortality data were collected from all eligible couples (currently married women of age less than or equal to 45) in the sampled households. A systematic sample of 2,937 households (every 10th) was taken from the complete list of households and all married women (2,957) in the selected households were contacted for obtaining data on fertility and child mortality.

Data collection and verifiation was completed in three months by eight male and eight female workers with adequate training in interviewing techniques. The reference period was from Diwali 1970 to Diwali 1971 (October 1971). The festival of Diwali was selected so as to help the informants to recall and report the vital events more accurately.

All schedules were scrutinized on a cent per cent basis and referred back to the field for verification when necessary. The evaluative data from the schedules was qualified on code sheets at the statistical section and sent for mechanical tabulation at the Delhi University Computer Center.

In order to measure the child loss experience in the study area, the index Child Mortality Rate (CMR) or the rate of child loss was used, which is defined as follows:

$$\text{CMR} = \frac{C_d}{C_b} \times 100$$

where C_d is the total number of children dead, of a group of married women; and C_b is the total number of children born alive to that group of married women.

Results

Some of the results obtained from the survey data are presented below:

Sex Ratio	904 females per thousand males
Crude Birth Rate	58.4 per thousand population
Crude Death Rate	20.3 per thousand population
Infant mortality Rate	182.6 per thousand live births
Marital Fertility Rate	308.7 per thousand married women
Total Fertility Rate	7.8 per woman.

Age Specific Death Rate

The age specific death rates in the baseline population are shown in Table 1. Mortality, which was highest among infants, decreased to the minimum in the age group 10-19 and then rose again. A similar trend of age specific mortality rates is found for almost all countries[1].

TABLE 1

Age specific death rates

Age at death (years)	Deaths per thousand population
Less than 1	182.6
1-4	28.6
5-9	3.7
10-19	1.8
20-29	4.9
30-39	5.8
40-49	6.9
50 and above	25.7
Total	30.3

Age of Mother and Child Mortality

Table 2 shows the child mortality rates by age of mother and degree of association between child loss and parity, keeping the age of mother as a constant. The overall child loss in the study area was 364 out of 1000 live births. Irrespective of parity, older women had experienced higher child mortality. The association between child loss and parity was maximum ($r=.7418$ which is significant at $p<.01$) among married women of 20-29 years of age. The influence of parity on child loss increased with the age of the mother.

Parity and Child Mortality

Table 3 shows the child mortality rates by parity and the correlation coefficients between child loss and age of mother at constant parity. Irrespective of the mothers' age, child mortality was low among mothers of lower parity and high among those of higher parity. All women of parity ten and more had lost 50% of their offspring. The correlation coefficients indicated that at almost all parities there were negative and insignificant correlations between child loss and age of mother. The negative and maximum correlation

TABLE 2

Child mortality rates (CMR) by age of mother

Age of mother (years)	No. of married women	CMR	r_i	b_i
Less than 20	458	25.7	0.5624**	0.2857**
20-29	1207	33.6	0.7418**	0.4960**
30-39	962	36.5	0.6899**	0.5028**
40 & above	330	41.0	0.7090**	0.5115**
All women	2957	36.4	0.7617**	0.4526**

r_i = Simple correlation coefficient between parity and child loss among the women of i th age group

b_i = Regression coefficient of child loss on parity in i th age group

** Values are significant at $p < 01$

TABLE 3

Child mortality rates (CMR) by parity

Parity	No of married women	CMR	r_j	b_j
1	359	15.9	—0.0061	—0.0003
2	354	21.2	—0.1196*	—0.0123*
3	306	25.7	—0.2045**	—0.0291**
4	262	32.5	—0.0055	—0.0010
5	284	32.9	—0.1061	—0.0194
6	258	37.2	—0.1330*	—0.0332*
7	207	38.5	—0.1715*	—0.0475*
8	191	40.3	—0.1300	—0.0354
9	117	42.9	—0.1441	—0.0428
10 & above	159	50.0	0.0245	0.0090
All women	2497+	36.4	0.5099**	0.1140*

+ Women with para zero are not included so the number does not equal to 2957

r_j = Simple correlation coefficient between age of wife and child loss among the women with j th parity.

b_j = Regression coefficient of child loss on age of wife among the women with j th parity

* Values are significant at p Λ .05.

** Values are significant at Λ .01.

Values with no asterisks are insignificant (r (–) 0.2045; significant at $p<0.1$) between child loss and age of mother was seen among women of parity three. The mother's age exerted a greater influence on child loss among women of parity seven.

It was desirable to know which of the two variables—age of mother or parity—was more strongly correlated with and exerted a greater influence on child loss. In order to study the first, different correlation coefficients were computed. The results obtained are as follows :

Simple correlation coefficient between age of mother and child loss, irrespective of parity was 0.51	(significant at $p<.01$)
Simple correlation coefficient between parity and child loss, irrespective of age of mother was 0.78	(significant at $p<.01$)
Partial correlation coefficient between age of mother and child loss, having eliminated the effect of parity from child loss was (–) 0.12	(significant at $p<.01$)
Partial correlation coefficient between parity and child loss, having eliminated the effect of age of mother from child loss was 0.69	(significant at $p<.01$)
Having considered the combined effect of age of mother and parity on child loss, the multiple correlation coefficient was computed to be 0.78	(significant at $p<.01$)

The above observations confirmed that child loss was more strongly correlated with parity than with the age of the mother.

In order to study the relative influence of the age of the mother and parity on child loss, the regression equation of child loss on age and parity was established as follows :

$$x_1 = .1542 \; -.240\, x_2 + .4964\, x_3 \;\ldots\ldots\ldots\ldots \; (1)$$

where x_1 denotes child loss, x_2 denotes age of mother, and x_3 denotes parity.

The regression coefficients (–0.0240) and (0.4964) of x_2 and x_3

respectively will determine the influence of each other on x_1. In equation (1), since the regression coefficient of parity (x_3) is more than that of age (x_2) the influence of parity on child loss is more than the age of the mother.

Education and Occupation of Husband

Table 4 gives a simple differential of the child mortality rates by the education of the husbands. The education of the women was not taken into account as the majority (9.5%) of married women are illiterate. The child mortality rate was found to be negatively correlated to the educational level of the husbands; the higher the

TABLE 4

Child mortality rate by husband's education and main occupation

	No of married women	Child mortality rates
Husband's education:		
Illiterate	1663	39.8
Literate*	342	36.5
Primary & middle school	600	30.7
High school & above	352	21.9
All husbands	2957	36.4
Husband's main occupation:		
Farming[1]	1406	39.4
Service[2]	503	32.7
Labourers[3]	657	44.6
Business	142	31.7
Students	100	23.5
Unemployed	20	46.7
Others	129	35.2
All husbands	2957	36.4

* Those who are just literate and have no school education.

[1] Those who were engaged in their own agricultural land.

[2] Those who were employed on a monthly salary basis and did not include daily wage labourers.

[3] This class includes agricultural labourers, bidi makers and artisans

education, the lower the child loss experience and vice-versa. In a study done in Taiwan, education and experience of child mortality were found to be negatively correlated with each other.[3]

The differentials of child mortality rates by the main occupation of the husband are also presented in Table 4. Child mortality was lowest amongst students who also had the lowest fertility. It was high among those engaged in agricultural labour, bidi-makers and artisans. The service class of people had neither high child mortality nor high fertility rates[4].

Religion and caste

Religion and caste still play an important role in influencing fertility and mortality especially in the rural areas. For the purpose of this study, all Hindus were divided into three sub-groups—High, Middle and Low, and their child mortality rates were compared with those of Muslims (Table 5). Low caste Hindus have higher child mortality rates than high caste Hindus. A similar phenomenon

TABLE 5

Child mortality rate by religion and caste groups and some selected castes

Religion and caste groups	No of married women	Child mortality rates
Hindus:		
1. High	585	27.9
2. Middle	1142	36.2
3. Low	1011	43.5
Muslims:	219	26.9
All castes	2957	36.4

Selected castes	No of married women	Child mortality rates	Marital fertility rates per thousand married women
Ahir	224	33.5	359.0
Brahmin	372	27.4	257.7
Chamar	312	50.9	331.3
Kurmi	502	36.2	297.7
Mallah	184	40.4	302.1
Pasi	303	38.0	335.4
Muslim	219	26.9	349.3

seemed to operate with regard to their fertility behaviour too.[4] It is interesting to note that Muslims had the lowest child mortality as compared to the three sub-groups of Hindus, although they also had the highest fertility[4].

Table 5 also shows the child mortality rates among some selected castes of the study area. The Chamars had the highest child mortality, followed by Mallahs, Pasis, Kurmis and Ahirs, while the fertility rate was highest among Ahirs followed by Muslims, Pasis, Chamars and Mallahs[1]. A rank correlation coefficient between the child mortality rates and marital fertility rates of the different castes was found to be (—) 0.1428 (significant at $p<.01$).

Closed Birth Interval

Table 6 presents the child mortality rates by the interval between the last two consecutive births (closd birth interval). It is obvious from this table that child mortality was negatively correlated with the birth intervals, in that the women who had shorter closed birth intervals had greater child loss experience than those who had longer birth intervals.

TABLE 6

Child mortality rate by closed birth interval

Interval (in months)	No of married women	Child mortality rates
Upto 12	162	48.7
13-24	767	40.6
25-36	672	32.0
37-48	288	31.5
49-60	137	30.9
60+	118	28.7

Note Total number of married women does not equal to 2957 as remaining 813 had either no issue or only one issue

Conclusion

The fertility behaviour of couples and cultures can be and has been measured, but not always understood. In order to do so, its relationship with a variety of factors has to be determined. Foremost among these factors are the death and survival of children, and their variations and correlates between sub-sets of the population.

An understanding of this is also vital to the design of family planning programmes. Priority should not be based on parity status alone, but on the number of living children. Contraceptive methods advocated—reversible or irreversible—to couples should similarly be based on some measurement of child loss.

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ATTITUDES OF MOTHERS OF NEW-BORN BABIES TOWARDS FAMILY PLANNING

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Attitudes towards family planning and its practice have formed the subject of a large number of research studies. The present report, based on a hospital survey attempts to study the attitudes of mothers of new-born babies, to family planning. Such studies are specially important because psychologically, socially and economically it is at this time that the mother starts a new life after the risks of maternity.

Study Sample

Five hundred and fifty women who had delivered at the Maternity Ward of Sadar Hospital, Ranchi, between September 1974 and April 1975, were interviewed 12-48 hours after delivery. The caste/community, religion and economic position of the interviewees were not taken into consideration as it would render the sample size extremely small. The study sample represented almost entirely the poorer setions of the population of Ranchi, i.e., mostly tribals and low caste communities. Ranchi is a rising industrial town and the socio-psychological set-up of its population is different from that of any of the advanced cities of India.

Results

As many as one-third of the women interviewed (170 or 30.9%) were not aware of family planning. These women were mostly illiterate (96.7%), and only six (3.3%) had been educated upto the primary level. Of the 380 mothers who claimed to be aware of family planning, 60 (15.8%) stated that they were familiar with the word "family planning" though not very clear about its objectives and programmes. However, when the objectives of the family planning programme were explained to them they freely expressed their opinions on it. The rest, i.e., 320 (84.2%) women had a clear concept of the word "family planning" and were willing to discuss the subject further.

When the 380 mothers who had expressed their awareness of the family planning programme were further questioned as to their attitudes towards family planning practices, as many as 153 (40.2%)

of them were in favour though those who were indifferent to family planning also constituted a relatively high proportion (30.3%) of this group of women, probably due to their socio-psychological, religious background. Also, most of them admitted that they did not have any independent thinking on this subject. Of the 153 mothers who had positive attitudes towards family planning none had actually used a family planning method. Among this group, 95 (62%) were seriously considering the adoption of a contraceptive method soon after their recovery from the postpartum effects of delivery. The husbands of these 95 women were also fully in favour of family planning.

The 97 mothers who had negative attitudes towards family planning were further interviewed to learn the reasons for their unfavourable attitudes. It was observed that their negative attitudes were largely a reflection of their husbands' attitudes as 49.5% of these women said that their husbands and family members were against family planning. Further, 32% of the respondents said that they wanted to have sons, while only 8.2% expressed a desire to have big families because of economic considerations and other social factors.

Conclusion

It is evident from the present attitude study, that less than half (40%) of the mothers who were aware of the family planning programme, belonged to the poorer sections of an industrial town like Ranchi and were in favour of family planning practices. The indifferent attitudes of an equally large number of women may be due to socio-cultural factors like education, authoritarian imposition of older family members, and possibly, the lack of publicity (about 30.9% of the sample was unaware of family planning) in the remoter areas of the city.

IMPACT OF INTER-SPOUSE COMMUNICATION ON FAMILY PLANNING ADOPTION

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Introduction

The Indian family planning programme which was launched in 1952 has, since then, witnessed a series of ups and downs, and a variety of strategies and approaches have been tried. The programme, which was initially confined to the distribution of simple educational materials, and advice on simple contraceptives especially the rhythm method, developed into a vigorous action-cum-research programme during the second and third Five-Year Plans. The emphasis first shifted to conventional contraceptives and later to the intra-uterine device and sterilisations.

The key to the success of the programme lies in the creation of favourable motivation for small families, which would lead to the adoption of family planning practices, and thus help achieve the basic objective of reducing the birth rate as soon as possible. Such a motivational programme has necessarily to be launched in the context of the resistance offered by the traditional social structure. In fact, it is this resistance that needs to be encountered and new norms, governing fertility behaviour, to be generated.

This realisation, has resulted in placing more emphasis on the role of communication. But, it is rather unfortunate that this emphasis has not gone beyond the traditional methods of communication.

An important element that has been over-looked is inter-spouse communication. Inter-spouse communication is influenced by social values and norms which have been changing with social and economic trends, though it is not clear whether such changes as have been, would favour the adoption of the small family norm. This field has remained outside the scope of research studies which have been officially promoted as these call for an inter-disciplinary approach.

The findings of western studies on husband-wife communication indicate that the nature and extent of husband-wife communication is a crucial factor in the adoption of family planning methods. A good rapport between the spouses is of vital importance in the successful practice of family planning. The success of the communication strategy individually depends on the extent to which mutual empathy and understanding is promoted by the programme itself. The problem is that we do not have any definite idea of the extent to which such communication could be utilised to influence family planning behaviour. In this context, the UN-ECAFE proposed to undertake an inter-country, cross-cultural project, focusing on husband-wife communication in the field of family planning, in India. Iran, the Philippines and Singapore, during 1972-73. The present study is one such attempt aimed at measuring inter-spouse communication and its significance in the adoption of family planning.

Sample and Data Collection

The study covered a representative sample of 1,501 males, 1,501 females and 749 couples in both rural and urban areas of Uttar Pradesh.

The information for the study was collected through personal interviews through structured questionnaires. Each respondent was asked to indicate to what extent he/she discussed with his/her spouse, matters concerning ten important areas of everyday life, viz., religion, future plans, husband's/wife's work, matters pertaining to sex, family size, family affairs, financial matters, current events and recreation or entertainment. The responses were categorised as "talk frequently", "talk occasionally" and "never talk".

Results

Table 1 indicates the pattern and amount of inter-spouse communication in these specific areas which have an important bearing on family structure, including size and spacing of children. Among the urban respondents, inter-spouse communication was high in relation to 'financial matters', 'family affairs' and 'education of children'. However, urban husbands claimed that they took topics concerning 'religion' and 'future plans' more seriously than their wives. Except for recreation and entertainment where there was the least amount of communication and particularly by the husbands, communication between the spouses was moderate. In rural areas too, there was a high degree of communication on matters related to "family" and "finance" though it was moderate where the 'education of children' and 'future plans' were concerned, and low in all the other areas considered here. It was interesting to note that both urban and rural wives than their husbands took a great deal of interest in matters pertaining to sex and family planning, including family size. Communication programmes should, therefore, place high priority on the stimulation of such communication.

TABLE 1

Extent of husband-wife communication on specific areas of every day life

Specific areas of daily life	Urban						Rural					
	Husband			Wife			Husband			Wife		
	Fre-quent	Occa-sional	Never	Fre-quent	Occa-sional	Never	Fre-quent	Occa-sional	Never	Fre-quent	Occa-sional	Never
Religion	45.6	52.7	1.7	22.0	67.9	10.1	21.4	65.6	13.0	15.8	48.7	35.5
Education of child	42.2	35.9	21.9	42.8	36.6	20.6	31.6	42.0	20.4	33.5	40.1	26.4
Future plans	40.4	56.5	3.1	24.4	57.1	18.5	39.0	53.9	7.1	22.9	41.4	35.7
Husband's/ wife's work	13.6	71.4	15.0	24.7	60.3	15.0	15.2	68.4	16.4	19.3	58.7	22.0
Matters pertaining to sex	9 1	61.3	29.6	16.0	83.7	0.3	11.9	66.6	21.5	24.5	70.7	4.8
Family planning, including size	16.7	72.9	10.4	29.6	65.6	4.9	4.3	64.3	31.4	24.5	61.6	13.9
Family affairs	46.3	51.3	2.4	54.0	44.3	1.7	45.9	49.6	4.5	56.5	40.4	3.0
Financial matters	59.3	37.6	3.1	50.9	46.3	2.8	48.7	41.6	6.7	55.0	35.5	9.5
Current events	22.6	57.2	10.2	20.9	53.7	25.4	6.9	62.6	30.5	7.3	35.9	56.3
Recreation and entertainment	1.4	64.5	34.1	24.0	48.8	27.2	1.9	63.9	34.2	7.1	28.6	64.3
Respondents		N = 287		N = 287					N = 462			N = 462

Degree of Husband-wife Communication

Prior to examining whether inter-spouse communication leads to the adoption of family planning, the respondents were classified on the basis of the degree of inter-spouse communication. In view of the fact that no single response can identify the quantum of inter-spouse communication, a composite index was developed to study the quantum of inter-spouse communication. The index is based on the over-all responses pertaining to the frequency of communication with their spouses on the specific items mentioned in Table 1. For the purposes of identification, the responses given by each respondent for each of the ten items was scored as '1' for frequent talk, '2' for occasional talk and '3' for no talk, and the scores for all of them were pooled. The total scores thus ranged from 10 to 30.

It was assumed that all the ten areas in question were equally important for the smooth running of the family. Respondents who scored between 10-16 were categorised as "high communicators", those scoring between 17-23 as "medium communicators", and those between 24-30 points as "low communicators", signifying high, medium and low inter-spouse communication respectively. Only those respondents who answered all the ten items were considerd for purposes of the analysis. They were further grouped as 'husbands from urban areas', 'wives from urban areas', 'husbands from rural areas' and 'wives from rural areas'.

Adoption of Family Planning

Table 2 gives a distribution of the respondents by the degree of inter-spouse communication and adoption of family planning. It was found that 30.7% and 27.5% of urban husbands and wives respectively constituted "high communicators" as against 18.4% and 16% of their respective rural counterparts.

From Table 2 it is quite evident that more high communicators generally tended to adopt family planning methods than medium and low communicators. That there was a high degree of association between the degree of inter-spouse communication and the adoption of a family planning method was also borne out by the X^2 test. This association held good for both urban and rural samples. The deviation of rural husbands might be due to a certain amount of inhibition in husband-wife communication.

The data relating to current contraceptive practice and level of inter-spouse communication revealed that high communicators were not only more likely to adopt family planning methods but also

TABLE 2

Communicators by degree of inter-spouse communication and adoption of family planning

	Urban				Rural			
	Husband		Wife		Husband		Wife	
	I	II	I	II	I	II	I	II
Ever-adopters								
Ever used	73.8	48.5	72.2	43.7	35.7	28.6	64.4	21.8
Never used	26.2	51.5	27.8	56.3	64.3	71.4	35.6	28.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Current-adopters								
Using	63.6	41.8	59.5	37.0	32.1	19.6	43.2	13.7
Not using	36.4	58.2	40.5	63.0	67.9	80.4	56.8	86.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

I High communicators.
II Both medium and low communicators

to continue their use. The X^2 test also confirmed this finding which was again applicable to both urban and rural samples.

Our data thus clearly indicates that inter-spouse communication is an important factor in the adoption and continuation of contraception. We must, therefore, chalk out programmes which would help in stimulating such communication. However, before we attempt this, we will have to identify the areas where we would have to make special efforts. Our data shows that a little less than a third of the couples in urban areas and about one-sixth of those in rural areas were 'high communicators'. We did not find a very significant trend of distribution among the 'high communicators' when they were grouped by age or by duration of married life. (Table 3). However, the proportion of 'high communicators' was low in the younger and older age-groups. A similar pattern was noticed with regard to the duration of marriage. Religion-wise, Hindu husbands had an edge over Muslim husbands both in urban and rural areas. On the contrary, Muslim wives had a slight edge over Hindu wives. A clear and direct relationship of the level of inter-spouse communication was found when the respondents were

TABLE 3

Socio-economic distribution of 'high communicators'

	Urban		Rural	
	Husband	Wife	Husband	Wife
Age of wife (years)				
Up to 19	21.4	30.8	11.7	8.9
20-29	30.6	19.2	15.1	12.8
30-39	31.9	33.6	23.4	23.1
40 +	30.0	37.0	40.0	10.5
Mean	30.7	27.5	18.4	16.0
Marriage duration (years)				
0-5	23.6	24.6	14.0	9.0
6-10	23.4	18.3	11.6	13.0
11-15	39.3	25.9	17.4	15.6
16-20	35.7	35.6	27.9	21.6
21 +	32.7	34.0	20.3	19.3
Education of wife				
Illiterate	17.0	25.2	16.0	12.3
Below Matriculation	32.1	24.5	25.0	26.1
Matriculation	40.8	27.1	30.0	50.0
Graduate & above	51.6	44.1	—	100.0
Occupation of husband				
Non-Manual	39.7	27.5	28.2	28.9
Manual	15.5	28.4	17.0	13 8
Household Income				
Lower	12.2	22.2	12.5	10.0
Lower middle	21.5	20.0	15.0	17.4
Middle	37.8	30.0	36.9	20.3
Upper and upper middle	45.9	41.5	45.8	40.0
Religion				
Hindu	32.4	25.1	16.2	17.7
Muslim	28.9	32.1	16.2	17.7
No. of living children				
0-2	27.8	26.6	11.5	11.9
3-4	34.6	22.0	24.1	16.8
5 +	35.5	39.0	26.6	24.7

classified on the basis of the number of living children they had, the occupation of the husband, household income, and the level of education. This trend was uniformly observed both among urban and rural husbands and wives.

'High communicators' bore a direct relationship with the number of children, husband's occupation, standard of living and level of education. Since the family planning programme cannot influence any of the socio-economic and demographic variables which are favourable to inter-spouse communication and which ultimately lead to the adoption of family planning, the best approach, under the present situation, would be to promote special campaigns to inform and motivate the people, primarily in rural areas, to adopt a method. These campaigns could be specially directed to those people who have low levels of education, have large families and belong to the economically weaker section of society.

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PLANNING CULTURALLY RELEVANT NUTRITION EDUCATION PROGRAMMES:

WHAT CAN ANTHROPOLOGISTS DO?

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Ritual activities make up a large proportion of our nutrition education programmes. It is indeed disturbing to see that those entrusted with the task of providing nutrition education generally lack an adequate understanding of nutrition themselves. Surprisingly, despite the fact that nutrition education has been imparted at various levels for the last several years, neither its basic content nor approach has changed, nor has any serious attempt been made to evaluate the existing programmes. In fact, a substantial portion of nutrition education programmes do not educate, the usual evaluation techniques adopted do not evaluate, and the training programmes rarely train. Thus, in order to check this ritual, it is necessary to identify and overcome barriers to the diffusion of knowledge about nutrition especially in rural areas where the bulk of our population resides. The diffusion of knowledge about nutrition is assumed to be a critical component of nutrition education programmes.

Understandably, the desire for a better standard of living and better chance of survival is always present in every community. This desire, however, is rarely brought to the conscious level of the people i.e. it is rarely related to their health or nutritional needs. On the contrary, efforts have been made in the direction of creating new motives for learning, which rarely meet with success. Apparently, a change, if brought about from within the culture, is much more likely to be acceptable than a change from outside the culture.

The cultural aspect of nutrition is of direct relevance to the development of realistic nutrition education programmes, for it is extremely necessary to recognise what is good in a people's food habits and food taboos and how best their social organisation can be manipulated to incorporate certain new elements in their diet without disturbing existing ones. That many a time nutrition education messages do not convey even scientific knowledge about nutrition is apparent from the following example of one such advertisement regarding balanced food with less cereals. "Balance food with less cereals" proclaims the advertisement. Pathetically, it spells out in detail how this trick is to be accomplished. After exhorting the common man to defend himself against rising prices, it implores him to "take less of wheat and rice and more of potatoes and other cereals and green leafy vegetables and seasonal fruits". The advertisers seem to be blissfully unaware that coarse grains are now just as expensive as wheat, if not more in certain centres; that seasonal frutis do not just drop from the boughs or that the production of green leafy vegetables needs to be promoted. The advertisement will fool no one, certainly not the average coonsumer in any big city who knows that all the things he is being advised to eat in larger quantities are beyond his means.

Scientific Knowledge

Basically, there are four general levels of knowledge relevant to nutrition education. The first level is that of 'scientific knowledge' relevant to the spread of knowledge about nutrition. This represents the present day understanding of nutritional issues, especially the problem of malnutrition from different angles and considerations. At this level, the barriers to the spread of knowledge about nutrition lie in the scientists themselves and are mostly attributable to a lack of effective interaction and communication through timely publications, seminars and conferences. No doubt, many a time the latest findings about the progress made in the field of nutrition are not readily available to the nutrition workers in different regions of India. So much so, that there is often considerable confusion about the adoption of relevant standards and parameters for nutritional assessment of vulnerable groups. This is evident from a review of literature as different standards and parameters have been adopted by different researchers in different regions or situations. Obviously, there is a great need for standardisation of the instruments employed. No doubt, better results can be obtained with increasing exchange of knowledge and ideas about nutrition among the professional workers themselves.

Professional Knowledge

A second level of knowledge with a specific role in the spread of nutrition education is the level of 'professional knowledge'. It is often falsely assumed that those who are assigned the task of imparting knowledge about nutrition themselves possess enough of it. They tend to approach the problem more by their images about nutritional issues, rather than basing it on a systematic study of these issues. In fact, they should not only be familiar with the existing knowledge about food prescriptions and proscriptions in different vulnerable groups in different regions of the country but they should also know about their varied food related beliefs and attitudes. Besides this, it would be necessary to know whether the people are enthusiastic about improving their nutritional status or not and also as to whose nutritional status they are most interested in improving and what reasons they give for this. Moreover, they should possess adequate knowledge about the social structure and organisation of each community so as to understand the importance or social meanings which they attach to food. One way of overcoming this barrier to the spread of nutrition education is to involve in the nutrition training programmes, specialists representing such disciplines that are of direct relevance to nutrition. Obviously, a team consisting of public health and behavioural scientists (medical anthropologists), paediatricians, nutritionists, food technologists and general administrators, would do a better job of preparing nutrition workers for working in different areas rather than only nutritionists. There is no denying the fact that most nutritionists lack the community experience essential for developing realistic strategies for nutrition education programmes, particularly in North India. In this respect, it may be mentioned that in the South, Dr. C. Gopalan and his distinguished group of scientists at the National Institute of Nutrition, Hyderabad, have already laid a great deal of stress on the community aspects of nutrition.

Community Knowledge

A third level of knowledge relevant to nutrition education is that of 'community knowledge'. It has been observed that for securing knowledge about community structure, organisation and feeding practices, etc. nutrition educators often rely on literature which itself is outdated. Good anthropological or sociological studies in the broad areas of health and nutrition have been so few in our country that the trainers find it hard to understand the many changing aspects of the communities they deal with.

For planning or organising successful nutrition education programmes, for different rural areas, it would be necessary to be aware of the following characteristics of the rural community:

(a) That the joint family continues to be an important characteristic of the village community, though under the impact of urbanisation and industrialisation it is gradually breaking up into nuclear families. In a joint family, the authority of the paternal grandmother cannot possibly be ignored because of her important role in decision making both in the areas of infant, child and maternal health and nutrition. On the other hand, in the nuclear family the authority of the mother should be given equal importance.

(b) That the families are grouped into endogamous castes that describe the social position, status and role of the different members and also define the pattern of their social interaction as well as occupational categories, and that due to increasing urban contact, the traditional occupations of members of the scheduled castes and backward classes have changed a great deal, bringing about new changes in their traditional patterns of relationships.

(c) That both inter-caste and intra-caste factions operate in the village councils or 'panchayats'. These factions matter a great deal in the acceptance or rejection of new ideas related to health and nutrition. Often the utility of a new health practice like the opening of a feeding centre in the village is assessed not from the point of view of the whole village but from the point of view of its possible contribution to a particular faction. Thus, in order to seek community support from all sections of the community, both formal and informal community leaders need to be identified through such simplified methods as picking up of every tenth house and interviewing the head of the household regarding persons whom he considers useful for the programme. This method is called "sample method" as compared to the "selective group method". The latter is a two-step procedure: the first step involves the interviewing of three of four formal leaders to obtain information from them on influential and interested leaders in different sections of the community, and the second, is to interview them so as to find out as to who should be most useful to the programme. A health-cum-nutrition team consisting of commonly acceptable leaders can then be formed for securing continued support for the programme. The success of a programme depends upon the tactful handling of the existing factions of the village as well as on proper utilisation of the right type of community leaders.

(d) That in the village economy, families continue to relate to one another by the traditional "jajmani" system which has in fact undergone a considerable change during the past 30 to 40 years. For example, the present shortage of agricultural labour in Punjab is attributed to the non-availability of scheduled caste people for following this traditional occupation. Thus, as the scheduled caste people gave up their traditional occupation, the "jajmani" system lost its hold on the village economy.

(e) That the village society continues to be highly stratified as the status, position and role of its members is traditionally defined as well as socially sanctioned. Similarly, the village institutions continue to be supported by a set of values, beliefs, attitudes, traditions and customs and that each institution within the social system is integrated with other institutions so that the social system itself is relatively static. Thus, introducing a change in one area or institution is likely to affect other institutions. The barriers to change are cultural, social, economic or psychological. Cultural barriers relate to tradition-enforcing, conservative attitudes, social barriers relate more to group solidarity, factionalism, individual vested interests etc., economic barriers relate to the un-equal distribution of wealth, while psychological barriers generally relate to the problem of interpersonal communication and perception. One need hardly emphasise that for successful planning and functioning of health and nutrition programmes, all these barriers need to be identified and overcome.

Individual Knowledge

A fourth level of knowledge about nutrition education is the level of 'individual knowledge'. This is essential to the actual practice of proper infant, child and maternal nutrition. This is intended to be called "action-associated knowledge" as it would include knowledge as well as reasons for proper nutritional care. The individual must know, not only as to where to obtain a certain type of knowledge about nutrition but also why, when and how it should be obtained.

The following strategies can be adopted for spreading action-associated knowledge about nutrition:

(a) The first type of educational objective or activity towards spreading knowledge about nutrition is to make people aware of the advantages of proper infant and maternal nutrition in relation to the healthy survival of their children up to adulthood and also to realise the potential dangers of not practising these health and nutritional measures in terms of increased malnutrition, infections, morbidity and mortality.

(b) The second objective or activity would be to make people aware of the advantages of community support for following a healthful pattern of infant and maternal nutrition and its ultimate contribution to the welfare of the whole community, state or nation.

(c) The third objective would be to make people aware of the good aspects of the foods that are available locally but are not being utilised fully due to socio-cultural considerations.

In order to achieve these objectives, one must bear in mind that the individual is highly selective about the information offered to him as he selects it in relation to his existing beliefs. Moreover, he tries to scrutinize the information offered to him in relation to its relevance to his needs as he perceives them. For example, the "fear arousal" technique emphasising the knowledge of consequences for not following good nutrition could bring about acceptance of better nutrition. However, it may be pointed out that the individual may be willing to accept new ideas but at the same time he may be scared of the disapproval of this action by the authorities from whom he derives his beliefs, which may be referred here as "authority derived beliefs". An individual generally succumbs to a certain tendency to act according to his own perception of the reactions of these authorities. Moreover, he tends to foresee more of the negative reactions of these authorities, though in fact these may not be there. Thus in order to be successful in the educational objectives of spreading "knowledge of consequence", it would not only be necessary to identify these "reference authorities" but it would also be necessary to involve them in a nutrition education programme.

The second objective of increasing knowledge or awareness about community support is to facilitate social acceptability of the programme through the active involvement and support of formal and informal leaders of the community. These leaders if properly selected, at the community, caste and patti levels would prove most useful in the social acceptability of the programme, possibly when the health-cum-nutrition teams are formed.

The third objective relates to the spread of knowledge about local food culture. Knowledge about locally available foods that are nutritionally sound but owing to certain socio-cultural considerations are not utilised, needs to be obtained. This is possible only when food culture is sufficiently well probed into, preferably by an anthropologist, and when both the negative and positive functions of food taboos related to different health situations of the infant and mother are properly understood. Merely suggesting to the people that they eat foods which they perceive to be of negative value but are considered by the nutritionist as of high nutritional value would only amount to a wasteful ritual activity as long as they are not educated on their usefulness for their health. Knowledge about the preparation of different recipes, their nutritive value and demonstrable good effects on health and nutritional status needs to be provided preferably through the already recognised and accepted authorities of the people. Once new ideas about nutrition are accepted by these authorities, the other members of the community will easily accept them because the fear of the authorities' disapproval would not be there.

Thus, nutritional improvement can be brought about by increasing acceptance and utilisation of a wider variety of foods already available in the community. Apparently, to attain this nutritional objective, a change from within the culture would be more lasting then the one introduced from outside. In order to bring about nutritional improvement, there are many specialists who can be of help, but the anthropologist, in particular, can help the nutrition worker in the following ways.

(a) To understand the nutritional pattern in relation to other aspects of culture and to identify those elements which can be changed without undue disorganisation of the whole.

(b) To discover beliefs and attitudes related to nutrition of not only the people at large but also of those authorities from whom these are generally derived.

(c) To identify the nature of these beliefs and attitudes so as to assign priorities in dealing with those beliefs and attitudes that are of lesser intensity and importance.

(d) To identify what local foods are already known and liked but are taken in small quantities because of certain social, cultural and medical considerations, so that these could be recommended in greater quantity or their frequency could be increased for they would automatically bring about nutritional improvement.

(e) To introduce new foods in such form and content that will easily get integrated with the local dietary style by securing community support not only in the acceptance of the new foods, but also in the actual preparation of the receipes.

(f) To define and differentiate, as far as possible, permanent and temporary taboos so as to avoid any drastic change in the existing patterns.

(g) To foresee people's sensitivities to the introduction of new foods.

(h) To determine such infant and maternal nutrition entry points that are directly relevant to local cultural practices.

(i) To help in the planning of relevant nutritional educational messages and, finally.

(j) To help in the actual training of nutritional workers at various levels.

For planning culturally relevant nutrition education programmes, certain basic information is required. Table 1 highlights the importance and utility of this information

TABLE 1

Planning culturally relevant nutrition programmes

Field of knowledge	Type of information required	Utility of information
1. The community and its culture.	1. Pattern of social groupings 2. Pattern of ecological adaptation 3. Pattern of leadership	1. Cultural linkage of programme 2. Occupational linkage of programme 3. Safeguard against factionalism
2. Childhood illnesses	1. Belief pattern 2. Role of local health functionaries	1. Planning medical care service 2. Utilising local health functionaries
3. Malnutrition	1. Factors in: Physical environment Biological environment Socio-economic environment Cultural environment	1. Planning realistic nutrition intervention programme
4. Food culture	1. Food habits and food taboos of vulnerable groups (positive and negative functions). 2. Food beliefs of local midwives	1. Capitalising on positive aspects of food taboos 2. Training and utilising local midwives

The task of changing food habits or improving nutrition is a problem of 'cultural construction' in which the collaborative efforts of nutritionists, agriculturists, economists, food technologists and medical anthropologists are required. The question arises, can the rural people who, so far, did not feel the necessity of having latrines in their own houses, be motivated to improve their nutritional status or can they even be made to understand the consequences of poor nutrition on health? This whole area is related to the kind of values which they attach to health and nutrition. It may not be out of place to mention here that despite years of functioning of several departments of social and preventive medicine in various medical colleges in India, the young medical interns who have been exposed to compulsory rural internship programmes, continue to assign the lowest priority to working in the field of public health especially when they are posted to rural areas, in complete disregard to the health needs of the bulk of the Indian people*.

Clearly the defective rural orientation or the pattern of medical education alone is greatly responsible for such inadequate preparation of the medical interns for performing their due role towards the attainment of a national health goal. That very little is taught about nutrition and its relationship with other aspects of health would be evident from a careful look at the medical syllabus of any medical college. Similarly, inadequacy of knowledge about nutrition among nutrition field workers can easily be correlated with their training and preparation. Thus it would not be an exaggeration to say that deficiencies of nutrition education programmes can be attributed more to the adoption of faulty methods and techniques of training and approaches than anything else. The field of nutrition education indeed is in a critical stage of infancy and in order to see it pass through adulthood smoothly, a lot of hard collaborative work needs to be done urgently.

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* Based on the personal experience of the author as a member of the Johns Hopkins team in India studying rural internship programmes in seven Indian medical colleges during 1962-66 (Detailed findings of the rural internship study are being published by the Department of International Health, School of Hygiene and Public Health, The Johns Hopkins University.)

USE OF KAP DATA FOR FAMILY PLANNING PROGRAMME MANAGEMENT

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The growing concern over the population problem, the importance of which can hardly be overemphasised, has stimulated a great deal of research effort. On the Indian family planning programme alone, 836 research papers were reported to have been published between 1965 and 1972.[1] As at least two compilers[2] of bibliographies on family planning have pointed out, most of this research effort has gone into conducting KAP surveys. In the early phase of the implementation of the national programme, KAP surveys were useful for constructing an overall picture of family planning practices and beliefs, but now the importance of this role has diminished. Many studies have revealed a large gap between favourable attitude to family planning and its practice. The usefulness of KAP studies will now depend on their contribution to the evaluation and guidance of existing programmes. As Cleland[3] has pointed out, the use of KAP studies to provide guidelines for administrative decisions has yet to be exploited.

One reason for the inability of KAP surveys to identify any decisional implications for the family planning programme is that the analysis of KAP data has been very simplistic. Most researchers have presented very elementary transformations of raw data. (The profiles of respondents on the many variables on which data was collected). Some researches have made attempts to find correlations between the use of family planning methods and the characteristics of an individual. The result of all these studies has been the identification of numerous variables which have some correlation with family planning adoption. Since multivariate analyses have not been done, the relative contribution (joint contribution) of the different factors to acceptance of family planning has not been identified.

The study conducted by Ross and Bang in Korea identified good predictors of use and presented an advancement in the techniques of analysis[4] However, it failed to exploit fully the insights offered by the Automatic Interaction Detector (AID) analysis into the characteristics of adopters and non-adopters and the consequent decisional implications for the programme administrator.

The AID technique used by Ross and Bang for the analysis of their KAP data was first proposed by Morgan and Sonquist.[5] In this technique, a tree structure is generated through sequential splits of the sample on chosen variables such that the within-group variance on account of the dependent variables is minimised. Although the use of AID has been reported in a variety of situations, it has found only limited use in family planning research.

This paper indicates how KAP data can be used to suggest micro and macro level decisional implications for the programme administrator.

First, the AID analysis was applied to data on a sample of 350 respondents from Gujarat collected by the Operations Research Group (ORG) in 1970-71 in a national survey.[6] The resulting tree structure was interpreted to suggest micro-decisional implications for the programme administrator. An effort was made to answer some questions that the programme administrator at the district and the primary health centre level is likely to ask. These are:

1. Which is the potential group of acceptors?
2. What action strategy will be needed to increase acceptance in this potential group?

Before answering these questions, the characteristics of the acceptors of family planning and their adoption process is described.

Who are the acceptors ?

A modified AID programme was used to generate the tree shown in Figure 1 to explain the use of any one family planning method. Three terminal groups with a varying potential for acceptance were identified. These, when put together, accounted for 91% of the total users in the sample. The characteristics of these groups are given in Table 1. In the sample, 18.5% of the couples had never been contacted by any family planning worker.

A large proportion of the couples contacted by the worker had a favourable attitude to family planning and had more than three children. A higher percentage of acceptance results from visits to this category; this market can be classified as "ready". However, the number of such couples is limited and therefore performance will reach a plateau once this market has been exploited completely.

What was interesting was that the couples in Group 2 had not been exposed to a family planning worker even after having six

TABLE 1

Characteristics of major acceptor groups

Group	Percentage of the sample	Characteristics	Proportion of acceptors in the group (rounded)	Acceptors as a % of the sample	Percentage of total acceptance (rounded)
1.	13.2	Favourable attitude, more than 3 children, exposed to the worker	80	10.5	55
2.	5.7	Favourable attitude, more than 6 children, not exposed to the worker	50	2.85	15
3.	12.5	Favourable attitude, less than 6 children, knowledge of family planning, not exposed to the worker	30	3.75	20
Total	31.4			17.10	90

children. This reveals the lack of systematic extension work. On adding to this group, couples with between three and six children and with a favourable attitude to family planning, the proportion of acceptance within the group decreased to 47%. This modified group was comparable to Group 1, except for exposure to the worker, and such an exposure increased acceptance within the group by 33%.

An analysis of the three groups with a large proportion of acceptors, reveals that a favourable attitude to family planning and at least three children are necessary conditions for the acceptance of family planning. If such couples are exposed to a family planning worker, the chances of generating acceptance are very high. Otherwise, some voluntary acceptance results when the respondents have a large (greater than six) number of children or possess knowledge of family planning methods.

Process of Adoption

A process of adoption was evolved after several applications of AID to the ORG data[7] Attitudes to family planning, the desire for

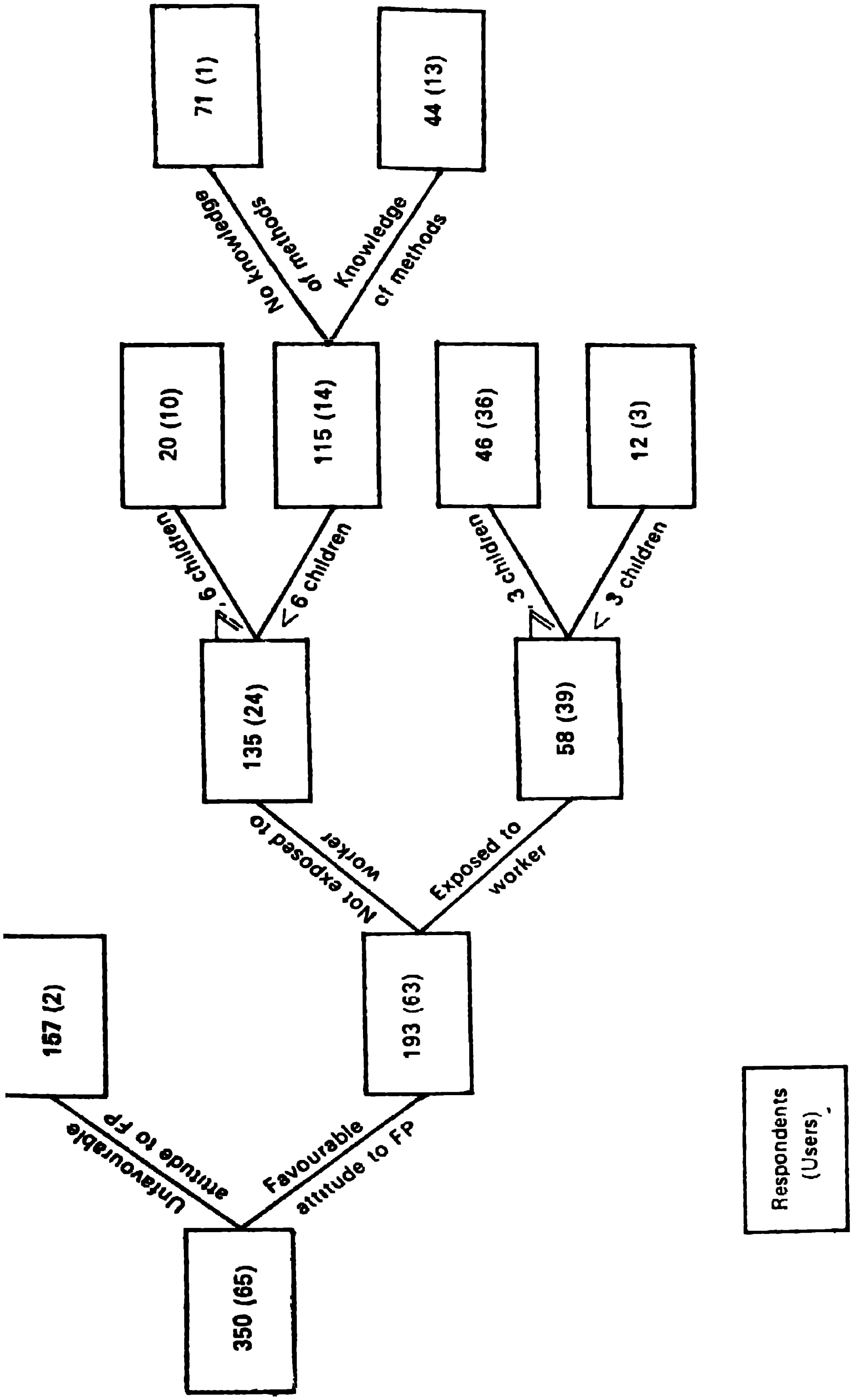

Fig 1 : T explain fam anning adoption

more children and knowledge of family planning methods were found to be important stages in the adoption of family planning. A schematic representation of the model is presented in Figure 2. The adoption model clearly demarcates the flow path of the use of family planning methods for spacing (Nirodh and IUD by respondents who desire more children) versus their permanent use (of sterilisation, Nirodh, and IUD by respondents who do not desire more children). The model explained 60% of the variance* on account of use in the total sample of 1,700 couples. It was able to explain the use behaviour of 80% of the user couples.

Potential for Family Planning Acceptance

This section illustrates the use of KAP data to identify the potential for family planning acceptance in a region. KAP data from Madhya Pradesh has been analysed by using the framework based on the stage model of family planning adoption described earlier.

TABLE 2

Potential for the family planning programme in Madhya Pradesh

Activities to be performed	Couples to be contacted (percentage of sample)	Percentage potential increase in acceptance
Impart knowledge to couples who already have a favourable attitude and no desire for more children	11.9	
Change negative attitude to family planning in couples who have no desire for more children and possess knowledge of family planning methods		1.5
Change negative attitude and impart knowledge to couples who have no desire for more children	33	16.5

* The explained variance was computed as : $NP^2 - \sum_{i=1}^{k} n_i p_i^2$

where N = Size of the parent group

P = Proportion of users in the parent group

n_i = Size of the "i"th terminal group in the tree.

p_i = Proportion of users in the 'i'th group.

k = Number of terminal groups

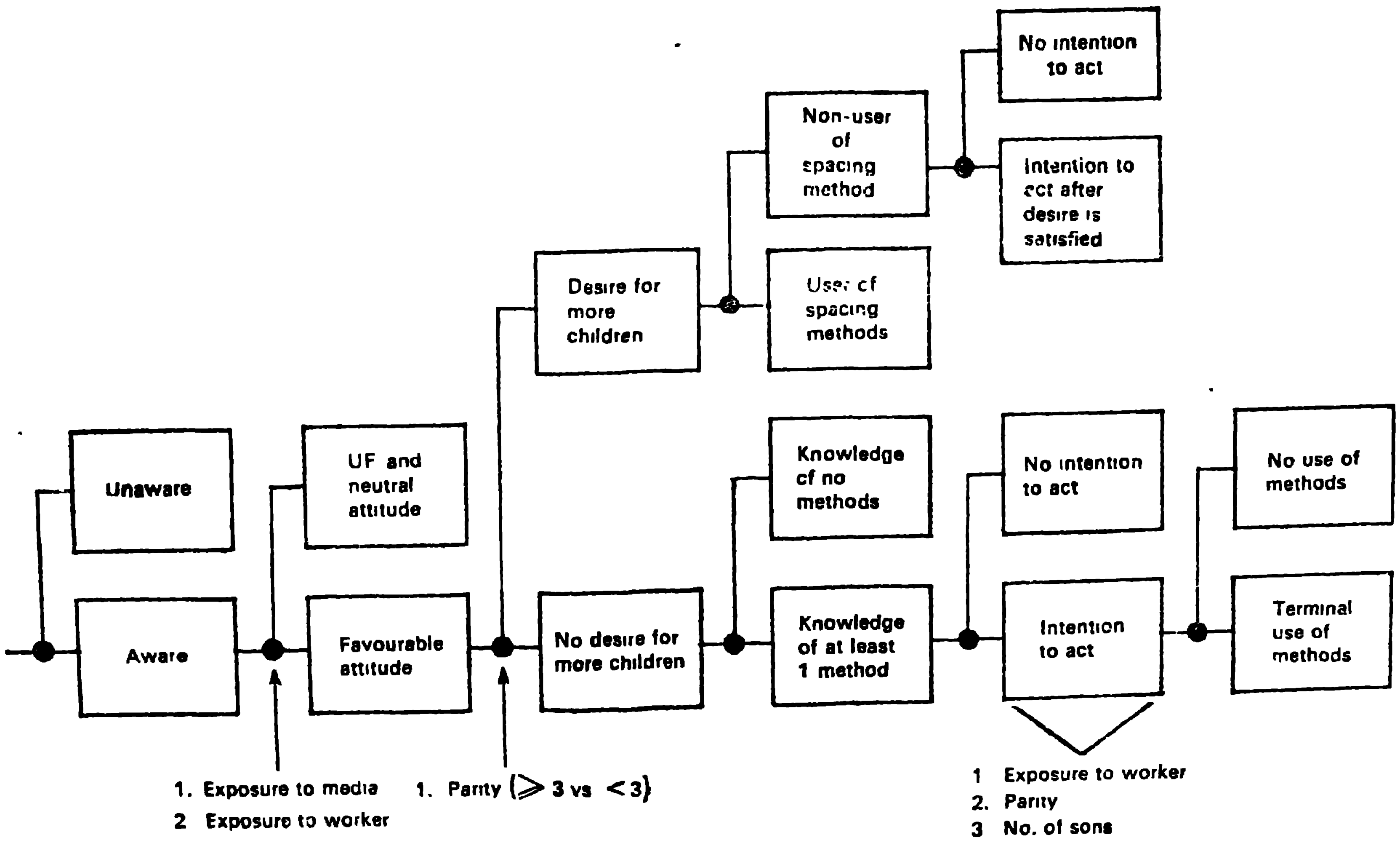

Fig. 2 · State model of adoption

The size of the potential target groups, the activities that need to be performed to achieve this potential, and the expected incremental acceptance rates from each group are presented in Table 2.

The richest and most immediate potential was identified among couples who already had a favourable attitude to family planning and desired no more children, but had no knowledge of family planning methods. The potential is immediate because knowledge can be imparted quickly and easily by the family planning worker. The potential is deemed rich because a high degree of success can be expected in imparting knowledge, especially to those who are already favourably disposed to family planning.

The other two groups represent a long term potential because an attitudinal change is also required. This would require a much greater effort on the part of the family planning programme, even after which, complete success cannot be expected. However, as the size of this potential group is large, even a 25 per cent success would double the acceptance rate.

Differential strategy for States

The tree structure in Figure 3 was generated by an application of the framework of the stage model of adoption on data from three States—Gujarat, Maharashtra and Madhya Pradesh. These tree structures revealed that the status of the family planning programme in the three States was widely different. In all three States, the largest number of acceptors (about 70% of all acceptors) came from the group with a favourable attitude to family planning, no desire for more children, and knowledge of at least one family planning method. In all three States, around 50% of the couples with this profile had accepted some method of family planning (Table 3). The reasons for poor performance in Madhya Pradesh were apparent when the size of this group was considered in relation to the total sample. In both Gujarat and Maharashtra, which had high rates of performance (17.6% and 15.3% respectively), this group formed 22% of the total sample. In Madhya Pradesh, the acceptance was low (5%) because the size of this group was small (only 8% of the sample).

In Madhya Pradesh, the acceptance rate could be doubled if knowledge of family planning methods is imparted to the group which has (12% of the sample) a favourable attitude, no desire for more children, and lacks the knowledge of family planning methods. Thus, knowledge seemed to be the bottleneck in Madhya Pradesh (81.7% of the sample lacked knowledge of family planning methods), whereas in Gujarat and Maharashtra knowledge was

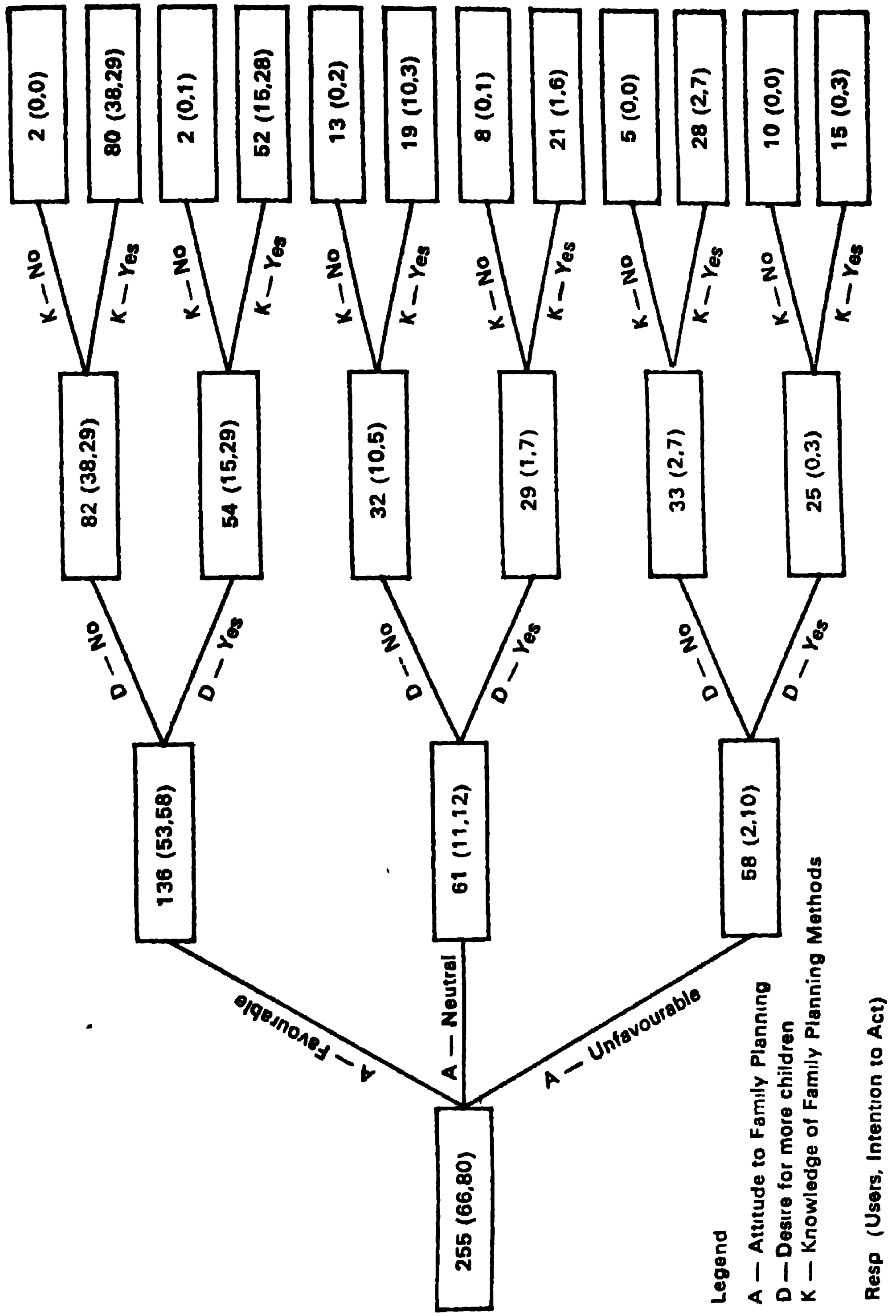

Fig. 3 : Analysis of ORG data by states

TABLE 3

Inter-state comparison of the size of the ready group

	Percentage acceptance of total number of couples	Couples with favourable attitude, no desire, and knowledge as a % of total no of couples	Total numbers of acceptors from the group as a % of total no of acceptors	Proportion of acceptance from the group %
Gujarat	17.6	22.0	68	55
Maharashtra	15.3	22.0	71	50
Madhya Pradesh	4.95	7.7	71	46

widespread (50% possessed knowledge) and it was the unfavourable attitude and desire for more children that acted as barriers in improving performance.

The decisional implication of this analysis is that a pattern of uniform effort across all regions and over time is not likely to be effective. As evident from the analysis of the family planning acceptance potential, sequential strategies will have to be followed, first for spreading knowledge and then for creating attitude and desire changes.

Comparison of KAP data over time

What can be learnt from successive KAP surveys conducted in the same region ? The data used so far was from a survey undertaken by ORG in 1970. Unfortunately, it was not possible to survey the original respondents of ORG or to conduct a Gujarat-wide survey. Data from a survey of 255 respondents from a town in Gujarat was available. Although this data was not representative, an analysis was done for illustration and is presented here. The data was analysed by using the type of tree structure used in Figure 2 ; the tree is given Figure 4. The comparison of these trees revealed that :

1. The acceptance rate of family planning among eligible couples increased from 17.6% to 26%. Five per cent of the total increase came from acceptors of spacing methods. Thus, the number of acceptors of terminal family planning methods did not increase significantly.
2. A substantial increase took place in the number of couples

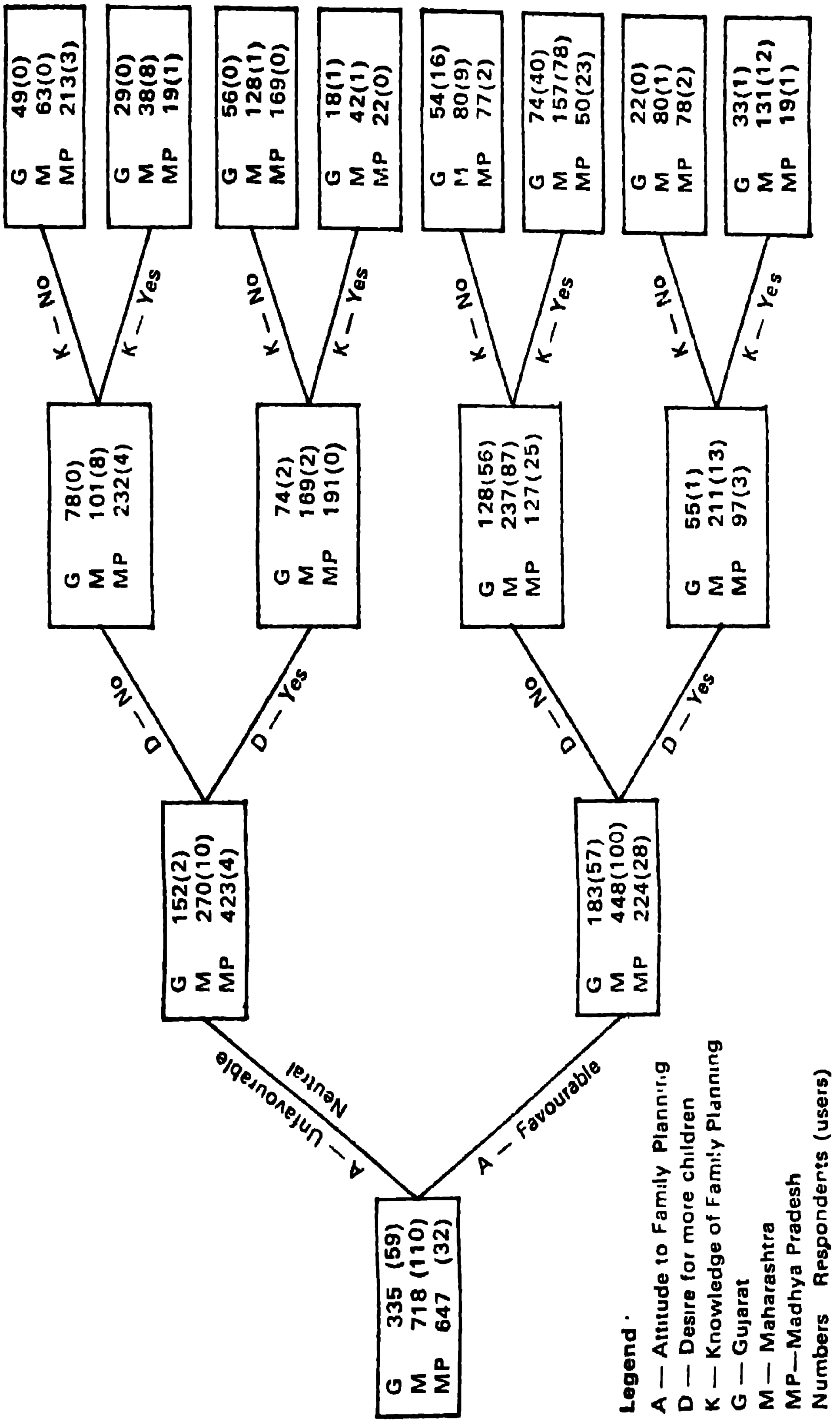

Fig. 4. Analysis of Gujarat (1974) Data

who had a favourable attitude, no desire for more children, and knowledge of family planning methods. The percentage of couples with these characteristics increased from 22 to 39. But this increased potential did not result in increased acceptance of terminal family planning methods.

3. In the 1970 group, 55% of the respondents had a favourable attitude; the proportion of couples with a neutral attitude was negligible. While no change took place in the percentage of couples with a favourable attitude, the percentage of couples in the 1974 group who had a neutral attitude towards family planning increased to 24.
4. No perceptible change took place in the percentage of couples with no desire for more children.

In summary, it can be said that between the two groups, the 1974 group had a larger proportion of couples with knowledge of family planning. Also, some change took place in attitude, but there was only a negligible difference between the two groups in the acceptance of terminal methods.

While this analysis did not compare the total population of 1970 with that of 1974, it illustrated the use of KAP data to compare actual and potential short term acceptance of family planning. When the potential, through knowledge and attitude change, is tapped, changes in family size norms or in the desire for children may be required. Desire change can be achieved only over a long period perhaps through development.

The inter-State analysis also suggests that a differential emphasis in terms of methods of family planning is possible. Maharashtra was able to add 12 per cent to its acceptance figure by popularizing spacing methods among those couples who had a favourable attitude to family planning and knowledge of family planning methods, but desired more children. This potential had not been tapped in both Gujarat and Madhya Pradesh, at that time.

Conclusion

KAP data has been variously criticized for its inadequacy and unreliability. The use of such data has been, to date, only for the justification of family planning programmes. This article suggests that KAP data can be used to evolve a classification scheme based upon attitude, desire, and knowledge. Previous researchers have tried to relate acceptance to single dimension characteristics, whereas this analysis explains acceptance by examining several characteristics simultaneously. Such classification and its use for the strategy and operational design of the family planning programme is illustrated here.

The taxonomy of classification suggested here is brief (involving the measurement of four variables through direct questions) ; the programme administrator can carry out simple KAP type surveys and design differentiated strategies.

Also, this framework would be useful in programme evaluation because intermediate indicators of performance would be available.

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OPEN-ENDED AND CLOSE-ENDED QUESTIONS ARE THEY COMPLIMENTARY?

SHRI VICTOR JESUDASON
(Council for Social Development, New Delhi)

The questions used to elicit responses in a survey can be broadly classified into two categories—close-ended (or pre-coded) and open-ended questions. In the former, the respondent is asked a specific question and the reply is recorded in any one of the answer categories that are provided. The manner of asking the question is standardised so as to reduce inter-interviewer variability. If the responses are to be recorded adequately, the answer categories must be mutually exclusive and completely exhaustive. One of the assumptions of close-ended questions is that the respondent is capable of understanding and answering the questions. Open-ended questions, on the other hand, do not specify the exact form of the question. The task of questioning and eliciting information is left to the interviewer. Often the responses are recorded *verbatim.*

Strong controversy rages around the appropriateness of one form of question over the other. Some argue that the open-ended form of question is the only appropriate form for the Indian situation where a majority of the respondents are illiterate. Others prefer close-ended questions because of efficiency and due to their standardised form of eliciting responses.

Text books of research methodology often suggest that close-ended questions may profitably be used if the researcher has enough information about the answer categories. On the other hand, if the study is of an exploratory nature, open-ended questions should be used.

The purpose of this paper is to provide illustrative data from a study in which both close-ended and open-ended questions were used. An effort will be made to document the gain in information made by using both the question formats in a complimentary fashion.

The present study seeks to identify those food items that were regarded as taboo during lactation. Although information on some of the foods that were regarded as taboo was available, it was felt that the list may not be complete. So, it was decided to make use of both open-ended and close-ended questions.

Order of questions

The question format for the two open-ended questions was: "Do you particularly avoid eating certain foods during lactation? If yes, could you name the foods?" For the close-ended question, a list of twelve food items that were earlier identified as food taboos was read out one by one and the respondent was asked whether she ate that food during lactation. As the close-ended question would have conditioned the respondents about the answer they could give for the open-ended question, the latter was asked first

Probing for open-ended questions

The investigators were instructed and trained to probe for specific food items if the respondent gave vague or generalised answers. If a respondent named one food item, she was probed by asking "what else?" A maximum of four food items was recorded.

Findings

Table 1 gives the answers to the open-ended questions cross classified by answers to the close-ended question. If the study had used only an open-ended question, we would have concluded that 613 out of 1151 or 53.3 percent did not report any food taboo during lactation (last row left column). On the other hand, if the study had used only a close-ended question, we would have concluded that

TABLE 1

Number of food items regarded as taboo during lactation, open-ended question vs. *close-ended question*

No of items mentioned in close-ended question	No of items mentioned in open-ended question (%)					Total
	Nil	One	Two	Three	Four	
Nil	15.5	2.2	1.4	2.6	0.7	9.0
One	12.6	6.7	6.1	3.9	0.7	8.6
Two	14.7	11.2	7.5	7.2	4.0	11.1
Three	12.4	14.6	9.5	7.2	5.3	10.6
Four	11.7	15.7	13.6	12.5	9.3	12.1
Five & above	32.0	48.2	60.4	63.2	70.7	48.6
Total	100.0 (613)	100.0 (89)	100.0 (147)	100.0 (152)	100.0 (150)	100.0 (1151)

9% of the women did not consider any of the 12 items as taboo. When both the forms of questions were used only 95 out of 1151 or 8.3% did not report any taboo.

The first column shows that among those who did not report any taboos in the open-ended question, 32% reported that they considered five or more items in the list as taboo. Another 11.7% considered four items as taboo. This shows that if a choice is forced upon a researcher to choose either an open-ended question or a close-ended question, perhaps he should opt for a close-ended question as it would yield more information.

The first row in Table 1 shows that among those who did not consider any of the items in the list as taboo, 8.6% reported at least one food item as taboo in the open-ended question. This shows that the list that was used in the close-ended question was not completely exhaustive. If the study had only used a close-ended question, information about additional food items would have been lost.

Summary

Illustrative data from a study is provided to show that between open-ended questions and close-ended questions, the latter yields more information. However, when both are used in a complimentary fashion, the information gained is much more than when any one of the forms of questions is used singly.

ACKNOWLEDGEMENTS

This paper grew out of a large research project entitled 'An Experimental Non-Formal Education for Rural Women' undertaken by the Council for Social Development, New Delhi. The study was sponsored by the Government of India and funded by the UNICEF. It was under the overall direction of Shri T. A. Koshy and Shri Prodipto Roy had overall responsibility for research. Thanks are due to Smt. Sunanda Chowdhury for computational assistance and to Smt. Anita Dighe for critically reading an earlier version of the paper.

NEWS & NOTES

THIRD INTERNATIONAL CONFERENCE OF WPS

The Third International Conference of the World Population Society will take place in Washington D.C., from 5th to 7th December, 1976.

The Conference will specifically focus on priorities for research and action and arrive at suggestions, conclusions, recommendations and proposals for achieving the fulfilment of the World Population Plan of Action agreed upon at the World Population Conference in Bucharest in 1974.

Those interested in presenting papers at the Conference are invited to submit an abstract of the proposed paper on any aspect of population, though preference will be given to papers relevant to the fulfilment of the Plan of Action. The abstract in the original and three copies, fitted in a box 6" high by 5" wide and stating the title, author (s), and affiliation should be mailed to· Conference Manager, World Population Society, Box 106 Eagle Station, Washington D.C. 20016. Any further information about the Conference may also be obtained from this address.

FIRST ASIAN CONGRESS OF FERTILITY & STERILTY

The First Asian Congress of Fertility and Sterility will be held in Bombay from 19th to 23rd February 1977. The Congress will be sponsored by the Indian Association of Fertility and Sterility, with the patronage of the International Federation of Fertility Societies.

The Scientific Sessions of the Congress will cover male and female infertility, control of male and female fertility, endoscopy, the demographic aspects of reproduction, recent advances in animal reproduction, experimental trends in the biology of reproduction, medical education, pharmacological aspects of fertility and sterility, iatrogenicity and fertility control, genetic engineering and hormone assaying in sterility and fertility control.

The delegation fee for the Congress is Rs. 120/- (outstation cheques should include Rs. 3/- as bank charges). A pre-Congress Advanced Training Course in Fertility and Sterility will also be conducted from 17th to 19th February 1977, the registration fee for which is Rs. 250/-.

Further particulars about the Congress and the Training Course may be had from: Dr. Mahendra N. Parekh, Organising Secretary, First Asian Congress of Fertility and Sterility, Purandare Griha, 31/c Dr. N. A. Purandare Marg, Bombay 400 007.

BOOK REVIEW

SOCIAL WORK IN IRAN SINCE THE WHITE REVOLUTION

Author : Charles S. Prigmore.
Publishers : The University of Alabama Press, Alabama.
Price : $ 7.95, pp. 194.

The entire world, and more particularly the developing world, is in a process of great change. This change can be brought about by a government, an educational institution or any other agency. The book under review tells a story of social change and a saga of social welfare in a developing country like Iran. The Teheran School of Social Work, was one of the principal agents of social change in Iran. The author unfolds this story in four parts — A, B, C and D and in 11 chapters.

Part A describes in 8 chapters, the White Revolution — the peaceful revolution — against the backdrop of the socio-economic conditions in Iran preceding the revolution and its objectives. The first chapter gives a socio-economic and geographic introduction. According to W. Hardy Wickwar, "The harsh climate and scarcity of water combined with low per capita income, especially in rural areas, and a cultural preference for cereals in the diet, resulted in 1965 in an average calorie consumption more than 10 per cent below minimum requirements" (p. 7). This aptly describes Iran and its people. Since the revolution in Iran was peaceful, it is termed as white.

The pre- and post-period and the objectives of the Revolution are dealt in the following three chapters. Chapter 2 describes the social conditions in the pre-White Revolution period in relation to life in rural and urban areas, early efforts at land reforms and family life. A detailed description of the White Revolution including the 12-point objectives and machinery for their achievement and the progress attained after the revolution are given in Chapter 3. The author has also mentioned the operational objectives in the fourth and fifth development plans for workers' welfare and social welfare respectively. Since the Shah of Iran was the main source of the peaceful revolution, the author has quoted him extensively. The social changes generated by the White Revolution are discussed in Chapter 4. The author has classified the changes under rising expectations in rural and urban areas, women's changing role and their rising expectations, new emergences in the "elite", the middle class, rich, poor and skilled labour classes. Changes in family patterns and parental discipline, social institutions, rearrangements of values and priorities at both the social and personal levels and the role of social workers are also dealt with in this chapter.

Chapter 5 is devoted to the description and analysis of family planning. The author has appropriately stated that "because family planning and family welfare are reciprocally dependent, it is imperative that a family's immediate needs for food, housing, health and employment are met at the same time that a family planning campaign is embarked upon". (p. 54). Ten supportive laws and policies affecting family planning efforts, most of which were adopted partially as a result of recommendations from the Family Planning Association and the Teheran School of Social Work, are listed by the author. The list amply shows the fruitful role played by these voluntary agencies in promoting and advancing the cause of family planning This chapter is well followed by pictures showing the family planning personnel at work and other welfare programmes.

The last three chapters in Part A discuss the community welfare centres, other social services in urban and rural areas. The impact of the White Revolution in urban and rural areas is well described in these chapters. The community welfare centres "are a direct outgrowth" of the primary goals of the White Revolution. The author describes a variety of services provided by these centres. The services discussed under the urban social services fall broadly into four categories — family welfare, child welfare, personal welfare and labour welfare. The last chapter in Part A shows how social services in rural areas can be planned, organised and implemented to the maximum use. The author rightly observes, "A more lasting impact will result if the village leadership is involved throughout both the planning and action processes, since the basic objective is to build a permanent problem-solving capability rather than to solve specific problems alone" (p. 114).

The only chapter in Part B shows exhaustively the origin, growth, role and possibilities for the future development of the Teheran School of Social Work. The author describes the role thus: "The Teheran School of Social Work addressed itself increasingly to the tasks of establishing new social services, stimulating the enactment of new laws and the formulation of new policies, and developing an appropriate curriculum to prepare social work personnel, that would together attack problems whose alleviation was perceived as vital to the achievement of the goals of the White Revolution". (p. 132). How a School of Social Work can guide, initiate and support voluntary and government welfare programmes has been well depicted by the author. The two charts in the chapter show the growth of the student body and the employment of those who have graduated from the School.

Chapter 10 specifically discusses the role of the Director of the Teheran School of Social Work, in implementing the social aspects of the peaceful revolution. Miss Sattareh Farman-Farmaian, the Director, was the head of two agencies, the Family Planning Association of Iran and the Community Welfare Center of Iran. The author has described the triple role of Miss Farman-Farmaian in promoting the cause and objectives of the White Revolution. About her success the author remarks, "one secret of her success has been her ability to obtain funding from individual philanthropists as well as from various foundations, groups, and individuals" (p. 159).

The last chapter brings into prominence some of the probable future directions of the White Revolution and of the Teheran School of Social Work. The chapter also tries to tie together the three main content areas of the book — the peaceful revolution, the Teheran School of Social Work and its Director as the initiator of various social experiments in Iran related to the White Revolution. The author has stressed the prospective role of the School and the responsibilities of future social workers in Iran. A chapter-wise reference list, a selected bibliography and an index are given at the end of the book.

The author's style is simple and lucid. The reviewer feels that this is a "must reading" for professional social workers, sociologists and public administrators. The author and the publisher deserve to be congratulated.

—Mr. J. S. Apte

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INDIA'S EXPERIENCE WITH STERILISATION PROGRAMMES, 1965–75: AN OVERVIEW OF RESEARCH RESULTS*

DR. MONI NAG

(Center for Population and Family Health,
Columbia University, New York)

India and the United States are among the few countries in the world where sterilisation has been accepted by a large segment of the population as a contraceptive method. In the United States although the contraceptive pill is the most popular method, well over one million persons undergo sterilisation annually, and for the past two years more than half of them have been men who have obtained vasectomies. In India, at the end of March 1974, out of 15.6% of couples in the reproductive age, protected by contraceptive methods, 11.5% were protected by sterilisation. The proportion of couples protected by IUDs and other conventional methods were respectively 1.3% and 2.8%.[1] The recently renewed interest in sterilisation makes it worthwhile to make an overview of experience, research results and needs regarding the programmes.

Annual variation in number and sex-ratio

It was impossible for anyone to foresee in 1956, when sterilisation was included in the family planning programme, that the number of sterilisations would increase from about 7,000 in that year to more than three million during 1972-73 and that the total number of sterilisations performed up to March 1975, would exceed 16.2 million. The increase in total number as well as the ratio of male to female sterilisations was generally gradual, as can be observed from Table 1 below.

The sharply increased acceptance of sterilisation in 1971-72 and and 1972-73 was mostly due to the tremendous response to vasectomy camps. The figures available for Gujarat State indicate what can happen when well-organised vasectomy camps are set up. The annual figures for the State during April 1966-March 1971 ranged

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* It is an updated version of the paper prepared for the workshop on *Behavioral-Social and Public Health Aspects of Surgical Contraception· Research Approaches* held at Bethesda (U S A), June 18-19, 1973, under the auspices of the National Institute for Child Health and Human Development.

TABLE 1

Sterilisation performance in India through Government programmes, 1956 *to* 1974-75*

Year*	Number of sterilisations†		% of male sterilisations†
1954	7,153		33.5
1957	13,736		30.2
1958	25,148		36.5
1959	42,302		41.7
1960	64,338		58.4
1961	104,585		61.1
1962	157,947		71.1
1963	170,246		67.3
1964	269,565		74.6
1965	476,889		84.2
Jan.-March 1966	193,934		90.2
1966-67	887,368		88.5
1967-68	1,839,811		89.6
1968-69	1,664,817		83.1
1969-70	1,422,118		74.2
1970-71	1,329,914		66.1
1971-72	2,187,336		74.1
1872-73	3,121,856		83.7
1973-74	942,402		42.8
1974-75	1,349,045	(provisional)	45.2
Total	16,270,510	(provisional)	74.6

* Does not include relatively insignificant number of sterilisations at private institutions.

** Based on calendar year (January to December) for 1956-1965; from 1966-67, based on financial year (April 1 to March 31).

† Data up to 1971-72 taken from India, Ministry of Health and Family Planning (no date, p. 42) Data for 1972-73, 1973-74 and 1974-75 provided by P. Singha of the Department of Family Planning, Government of India.

from 39,776 to 100,557. The number of vasectomies performed in just a brief two-month period in 1971-72 rose to 221,933, after a massive vasectomy campaign was launched, offering higher than normal Government incentives.[2]

The sudden reduction of sterilisations in 1973-74 can be attributed to the following factors: (1) discontinuation of mass vasectomy camps and the associated incentive programmes of the Central Government since these were considered "counter-productive"; (2) a public uproar following the incidence of 11 post-vasectomy deaths caused by tetanus infection, all occuring within one locality of Uttar Pradesh State during a vasectomy campaign in February-March 1972; (3) realization of the need for more systematic and sustained follow-up of sterilisation acceptors; and (4) a drastic cut in the budget of family planning programmes.[3] Some of the cuts in the budget were restored in 1974-75. Also, other improvements in the programmes were made, resulting in some increase in the figure for that year.

It has generally been the policy of the Government to encourage male, rather than female sterilisation, since vasectomy has several advantages. Still, until 1959, the majority of persons sterilised were females, perhaps mainly because it took the educational programmes some time to correct some of the widespread misinformation regarding vasectomy.

Table 1 shows that the percentage of male sterilisation gradually increased after 1957 until it reached a peak of 89.6 in 1967-68. It is difficult to understand why the percentage declined in the subsequent three years (1968-71) rose between 1971-73 and declined again in 1973-75. There seems to be some positive correlation between the number of persons sterilised and the percentage of males among them, but the variation remains mostly unexplained. Some of the factors attributed above to the reduction of sterilisation in 1973-74 can also be held responsible for the decline of the proportion of sterilised males in 1973-74 and 1974-75.

The percentages of male sterilisation in separate States and Union Territories for the period January 1956 to March 1975 are presented in Table 2.

There is a remarkable variation among the States in the percentage of male sterilisation, ranging from 16.5% for Nagaland to 94.4% for Orissa. The percentage of males was above 84.0 in the following States: Orissa, Tripura, Bihar, Uttar Pradesh, Tamil Nadu and West Bengal. Whether cultural variables, besides those related to the programme, such as status of women, can explain something of the variations by State or region has not yet been explored satisfactorily.

Variations by States

Since the States in India vary considerably in population size, the analysis of variations among them should be based not on the absolute number of sterilisations performed but on the percentages of couples in the reproductive ages (wife's age between 15 and 44 years) protected through sterilisation. The figures for the States of

TABLE 2

Percentage of males among persons sterilised in India by States and Union Territories from January 1956 *to March* 1975*

State/Union Territory	Total sterilised	Total males sterilised	% of males sterilised
1. Andhra Pradesh	1,805,388	1,120,110	62.0
2. Assam	242,934	195,404	80.4
3. Bihar	951,017	886,908	93.3
4. Gujarat	1,127,402	640,932	56.9
5. Haryana	292,711	210,762	72.0
6. Himachal Pradesh	66,789	40,133	60.1
7. Jammu and Kashmir	77,197	55,746	72.2
8. Kerala	776,589	539,512	69.5
9. Madhya Pradesh	1,228,551	998,322	81.3
10. Maharashtra	2,842,659	1,948,423	68.5
11. Manipur	3,659	2,780	76.0
12. Meghalaya	2,569	796	31.0
13. Karnataka	740,076	444,639	60.1
14. Nagaland	345	57	16.5
15. Orissa	809,339	764,152	94.4
16. Punjab	370,131	167,323	45.2
17. Rajasthan	371,628	288,331	77.6
18. Tamil Nadu	1,833,527	1,549,037	84.5
19. Tripura	20,685	19,327	93.4
20. Uttar Pradesh	1,287,631	1,151,461	89.4
21. West Bengal	1,020,064	861,937	84.5
22. A. and N. Islands	1,393	734	52.7
23. Arunachal Pradesh	165	74	44.9
24. Chandigarh	5,940	1,713	28.8
25. D. and N. Haveli	954	679	71.2
26. Delhi	101,871	53,450	52.5
27. Goa, Daman and Diu	16,648	3,161	19.0
28. L.M. and A. Islands	256	255	99.6
29. Mizoram	849	39	4.6
30. Pondicherry	18,659	13,516	72.4
31. Ministry of Defence	77,153	53,626	69.5
32. Ministry of Railways	175,731	123,085	70.0
ALL INDIA	16,270,510	12,136,424	74.6

Source: India, Ministry of Health and Family Planning (personal communication dated February 16, 1976)

* Figures exclude relatively insignificant number of sterilisations in private facilities

** Nos. 1 to 21 States; Nos. 22-30 Union Territories; and Nos 31-32 Central Government Institutions.

India as of March 31, 1974 are given in Table 3. The States have been arranged in order of the magnitude of the couples protected (%) through all methods of contraception.

TABLE 3

*Couples protected through sterilisation and all methods in various States of India as of March 31, 1974**

State	Percent of all-India couples in reproductive ages (15-44)	Percent of couples protected by	
		all methods	sterilisation
Maharashtra	9.4	22.9	21.6
Kerala	3.2	19.2	16.8
Punjab	2.2	18.8	11.4
Tamil Nadu	7.4	17.7	16.2
Haryana	1.6	17.3	11.0
Andhra Pradesh	8.2	17.2	16.1
Gujarat	4.8	17.1	15.5
Orissa	4.2	15.9	13.2
Madhya Pradesh	8.2	12.2	10.8
Karnataka	5.1	11.4	10.1
West Bengal	7.5	10.7	9.8
Himachal Pradesh	0.7	8.4	6.7
Assam	2.4	7.9	5.8
Jammu and Kashmir	0.9	7.5	5.9
Uttar Pradesh	16.7	7.2	5.6
Bihar	10.9	6.6	5.8
Rajasthan	4.9	6.3	5.2

*Source: Jain 1975: 18-19.

Maharashtra State leads all others in the number of couples protected through sterilisation as well as through all methods. By March 31st 1974, 22.9% of the couples in the reproductive age in Maharashtra were protected through all methods. Of these, 21.6% were protected through sterilisation. Rajasthan had the lowest percentage (6.3% for all methods and 5.2% for sterilisation). There is a close correspondence between the performance in all methods and in sterilisation in the States. That is, the States in which a large proportion of couples is protected through all methods are also those in which a large proportion is protected through sterilisation. The great variation among the States in the performance of sterilisation or in the family planning programmes should be kept in mind when India is compared with other countries, some of whose populations may be much smaller than that of a single Indian State.

A few studies have been done in order to identify the factors which are important in explaining the variation among the States.[4] A recent study by the World Bank using regression analysis shows that, on the whole, programme input variables explain a higher proportion of the variation in programme out-put (1971-72) than socio-economic variables.[5] Two inputs, namely locally run urban service points and rural field workers, explain about 90% of the variation in acceptor rates. Although the dependent variable in this analysis has been taken as the acceptor rates of all methods, the findings are valid for the acceptor rates of sterilisation since there is a close correspondence between these rates in all the States. It should be noted, however, that the inter-state variations in the *birth rate* are *not* as much related to programme inputs as to socio-economic variables.

Number of living children

The number of living children at the time of sterilisation is one of the most commonly recorded characteristics of sterilised males and females. In 17 selected studies[6] with a sample size of over 200 sterilised males, the mean number of living children was found to range from 3.5 to 5.4. With the exception of four[7] of these studies, more than 70% of the males sterilised had four or more children.

The mean of living children for sterilised females ranged from 4.4 to 5.4 in seven selected studies[8] with a sample size of over 100 females. With the exception of one study,[9] more than 70% of the women in the remaining six studies had four or more children.

A number of Indian States seem to have adopted standards regarding the number of living children required before sterilisation is permitted.[10] The actual data show that the standards were not strictly maintained. For example, 2.5% of a sample of 1,581 males sterilised in Cannanore District of Kerala, had no living children.[11]

There are studies to show that fewer couples with no living son volunteered for sterilisation than couples with no living daughter. Among a sample of 3,465 vasectomised men, there were only four men with no son, but 287 with no daughter.[12]

Age at sterilisation

Since the reproductive capacity of the female ends before that of the male, the wife's age at the time of her husband's or her own sterilisation is more relevant to birth prevention than the age of her husband. In 12 selected studies[13] with sample sizes of over 200, the mean age of the wives of sterilised males was found to vary from

28.7 to 33.5 years. The mean age of the husbands at the time of their operation ranged from 36.5 to 44.0 years.

Educational status

Educational status is a very commonly recorded characteristic of sterilisation acceptors, but most studies fail to indicate whether or not the sterilised persons are different from nonsterilised persons in this respect (or in other variables like income, occupation and religion).

In 1961 the illiteracy rate among the males and females aged 25 and over in India was 57% and 86% respectively. Among those undergoing sterilisation in the 1960's, however, the illiteracy rate was much lower. In nine out of the 10 male studies in India cited by Presser,[14] the percentage of illiterates ranged from 3 to 37. Six studies of female acceptors cited by Presser showed an illiteracy rate ranging from 2 to 40 per cent.

In a vasectomy camp organised in Kerala's Ernakulam District in 1970, 20.4% of 62,913 vasectomised men were illiterate. Since the male illiteracy rate was 35% in Ernakulam District both the camp and District programmes "reached a disproportionately large number of acceptors from among the literates".[15] The above comparisons indicate strongly that both male and female acceptors of sterilisation are more educated than are to be found among non-acceptors.

Religion

The data on the religious composition in the localities where sterilisations were performed are not available. From the all-India figures on religious composition, Hindus seem over-represented among sterilisation acceptors in the studies discussed by Presser[16] but under-represented in the studies which Kumar[17] has cited.

The religious characteristics of sterilisation acceptors in Ernakulam District of Kerala State and in the whole of Kerala, when analysed in conjunction with the religious composition of the total population in the District and the State, show that the percentage of Hindus among the acceptors is considerably higher than that in the total population.[18] The reverse is true for both Christians and Muslims, more so for Muslims. It is not known whether the differences found in Kerala regarding sterilisation are applicable to the whole of India or to other family planning methods.

Physical complications among sterilised men

No other deaths except the 11 mentioned above are reported to have been directly related to vasectomy in India.

Well-designed longitudinal studies which follow sterilised persons for a reasonable period after surgery are rare. Sterilised men are usually asked to return to the clinics if there are complications, but according to at least one report,[19] about 80 per cent of the cases did not come even for a post-operative check-up. In only a few studies have follow-up services been highly emphasized.

There is remarkable uniformity in the percentage of sterilised men who experienced any kind of complication or discomfort immediately after operation. Despite the idiosyncrasy of self-reports and the fact that the responses were obtained retrospectively after different periods of time, in 15 out of 17 selected studies[20] with a sample size of over 100, the percentage of persons who complained ranged from 18.1 to 40.5. In two studies, the corresponding percentages were 2.7 and 3.6. Pain in the testicles and at the site of operation was the most frequent complaint.

Some authors[21] have expressed the opinion that most complications after vasectomy are preventable as they result from technical errors and poor standards of personal hygiene and cleanliness among patients. One study[22] reported that most operative complications rarely lasted more than a week while another reported that the complaints persisted among 10.8% within a period of four to 24 months after the operation. The inconsistency of the research findings regarding the duration of complications and discomfort points to the obvious need for systematic long-term follow-up studies.

Is there a change in general health following vasectomy ? From the 16 selected studies, it was found that 70.2 to 84.6% reported to change, 0.0 to 23.9% reported improvement, and 1.6 to 21.6% reported a worsening of general health. The wide range of variability may in large part be a function of the timing of the interview, previous feeling toward sterilisation, psychological preparedness for sterilisation, or the definitional obscurity of the term "general health" among both sterilised persons and interviewers.

Physical complications among sterilised women

Only two cases of death related to female sterilisation have been reported in India.[23]

Sterilised women seem to have more immediate physical complications and discomfort than do sterilised men. In three selected studies of females,[24] immediate complaints were voiced by 50.6 to 80.0% of the samples. Menstrual disturbance and dysfunctional uterine bleeding seem to persist among some women even two years after sterilisation.[25]

Sexual desire and activity among sterilised men and women

Physiological knowledge would not lead one to expect sterilisation to influence sexual desire or activity of the operated men or women adversely. Rather, contraceptive protection provided by sterilisation should remove some of the anxieties surrounding intercourse and result in an upsurge of both desire and activity. Follow-up data on this question are less than conclusive, however, and suffer from a number of methodological weaknesses. All studies conducted in India regarding change in sexual desire and activity were retrospective in nature. Furthermore, the interval between sterilisation and follow-up varied considerably among the investigations.

In eight out of 12 selected studies[26] with a sample size of over 90, it was found that the percentage of sterilised men reporting no change in sexual desire after sterilisation ranged from 2.5 to 95.5. Sexual desire was reported to have increased among 0.0 to 23.3% and weakened among 0.9 to 53%. Variation across studies is considerable, perhaps in part, because factors other than vasectomy entered into the respondent's judgement.

Like reports of sexual desire, changes in coital frequency also varied widely. In six out of seven selected studies[27] with a sample size of over 90, 68.9 - 95.5% of sterilised men reported no change in frequency of coitus, 41.6% in another study indicated no change, increased coital frequency was reported by 4 0 to 17.7% and decrease by 4.5 to 40.6%.

A few studies have related post-operative sexual desire and activity to age, education, physical and psychological complications, pre-operative psychological condition and respondent's expressed anticipation of change. Some illustrative findings are worth citing.

One study[28] found sexual desire weakened in 40.9% of 44 male respondents aged 35-44; the figure was 70.0% among 20 respondents in the 45-54 age group. Another study[29] found sexual desire weakened in 52.2% of 601 respondents in the 38-47 age group and in 65.8% of the 193 respondents aged 48 and over. Similar results indicate that increase in age is directly related to post-operative diminution of sexual desire.

Educational status is significantly related to outcome. At least two studies[30] have shown that weakened sexual desire is more frequent among illiterates.

The role of anticipation is interesting. According to Pai,[31] a pre-operative discussion with the acceptor of the possibility of sexual after-effects "might precipitate the condition." In a comparison of vasectomies performed in hospitals and camps, he found a much higher percentage among the hospital cases who reported post-operative "sexual weakness". It was the hospitals, interestingly enough, which had spent a good deal of time on psychological preparation of prospective acceptors.

Kakar[32] has empirically compared anticipated changes in sexual desire and activity with those actually experienced. Of the respondents aged 25-34, 32% experienced weakened sexual desire after sterilisation although none had anticipated change. Among those 55 years of age and older, on the other hand, anticipation and later experience were more closely linked.

Very few studies have been done in India on changes in sexual desire and behaviour among sterilised women. In two studies[33] it was found that the percentages of women reporting increased sexual desire and activity were higher than those reporting a negative change. For both studies it is not possible to distinguish non-response from no change.

The above review demonstrates the recognition among investigators that post-sterilisation changes in sexual behaviour and interest are worthy of research. It is also obvious, however, that a standardized methodology has to be devised for the collection of reliable and comparable data. Kakar[34] has suggested a number of important areas of research as well as methodological guidelines.

Desire for Reversal (Re-anastomosis)

Three selected studies[35] show that the following three reasons are most commonly given for requesting reversal of vasectomy: (1) death of wife and/or remarriage, (2) death of one or more children and (3) desire for more children. These reasons are not mutually exclusive ofcourse.

In two studies,[36] 9.6 and 6.0% of men requesting a reversal were reported to be unmarried. This indicates the need for recording the marital status of the sterilised person.

The degree of success of vasectomy reversal in India is not well known. Two studies[37] made by following up 90 and 73 cases of vasectomy reversal show that the success rates in terms of sperm reappearance are 70.0 and 86.3 per cent. These are higher than the average of 60% derived by Lee[38] from a number of earlier studies in different countries. It is difficult to explain why the proportion of successful impregnations in the Indian studies were so different (20.0% and 57.6%). The average was about 30% in the studies reviewed by Lee.

The success rate of reversal is likely to be inflated unless the total number of persons who requested it are taken into account. These numbers are not known for the two studies mentioned above.

Requests for the procedure seem to be rather rare. According to one report,[39] out of 62,913 men vasectomised in 1971 in one area 117 (.002%) cases were registered for reversal. According to another report,[40] only 135 (.001%) out of about 100,000 vasectomy cases requested a reversal.

There is no well-designed Indian study regarding the re-anastomosis of female sterilisation.

Use-effectiveness of Sterilisation

Clinical facilities for post-operative semen tests are not available in many places in India. Even where such facilities are available and specific instructions are given to sterilised men to return for examination, they do so very rarely. Out of 180 sterilised men in one study sample,[41] only two had had their semen tested after the operation. A surgeon working in a family planning clinic in Baroda City estimated that only about one in ten sterilised men return for semen tests.[42] In rural areas, where most of the vasectomies in India are performed, the proportion is likely to be less.

Surveying the occurence of pregnancy among the wives of sterilised men is another method of estimating use-effectiveness. In a follow-up study[43] in Maharashtra State only four out of 1191 wives of vasectomised men were found to give birth within 12 to 24 months after the operation. The failure rate (0.3%) was less than the rates (2.0 and 4.1%) found in two studies[44] in the United States.

A few studies of the failure rate of female sterilisation have been done in India but they are not strictly comparable with one another. The percentages range from 0.1 to 1.9 in four selected studies.[45]

Demographic Effectiveness of Sterilisation

The demographic effectiveness of sterilisation has received more attention in India than in any other country because of its relatively great importance in the national family planning programme. Most of the research efforts have been focussed on estimating the number of births already prevented or likely to be prevented by sterilisation.

The methods used by Haynes *et al*[46] for estimating the number of future births prevented by sterilisation represent a definite improvement over those used previously by others.[47] The investigators selected two samples for comparison. The first consisted of 1,081 women in two Districts of Kerala State who were either sterilised or were the wives of sterilised men. The second was the control sample consisting of 1,000 women selected from the files of a continuing demographic survey conducted for a different purpose in the same Districts. Using the number of births occurring at each age-level of women in the control sample, they estimated that 2.48 future births were prevented per sterilisation.

Despite different assumptions and methods, Jain's[48] estimate of 2.489 births prevented per sterilisation in India is very close to that of Haynes *et al.* Compared to the findings reported above, Jain appears to have generally underestimated the ages of women at the time of sterilisation.

The conclusions of Simmons[49] are roughly similar. Combining the data on the age distribution of the wives of a small sample of vasectomised men, together with estimates of the probability of marriage survival and the fecundity of women at various ages, Simmons estimated that an average of 2.35 births was prevented by each sterilisation. In a manner not clearly explained, Simmons then adduced a "weighted average" of 2.1 births prevented in the marital careers of sterilised women and the wives of sterilised men.

An estimate of the demographic effectiveness of sterilisation in India from 1956 to 1969 has been prepared by Venkatacharya[50] on the basis of matrices of annual birth probabilities specified to the age of women at the time of their own or their husband's sterilisation. His matrices provide a redefined correction for susceptibility to the risk of pregnancy at various ages of the women.

Motivation for Sterilisation

As has been shown earlier, the timing of sterilisation in India is relatively late with respect to the number of living children and age of the acceptor. It is thus not surprising that a large proportion of acceptors, when interviewed, give the permanancy of the sterilisation method as a reason for their preference.[51]

Dubey[52] has argued that newly-married couples usually live in extended families during the first stage of their family cycle, where they do not have the motivation or decision-making authority for birth control. At a subsequent stage, when the couple lives as a nuclear family, they find themselves burdened with too many children and therefore prefer a permanent and sure method such as sterilisation over other methods which are appropriate for birth-spacing. This hypothesis, although plausible, has not yet been empirically verified.

At least in some regions it is reasonably well-established that individual motivation and decision-making are substantially influenced by policies and the efficiency with which they are executed. A study[53] in West Bengal found that the relative unpopularity of vasectomy compared to a few other States of India in the early phase of the sterilisation programmes was due to some misinformation among the people regarding the effects of vasectomy. When an adequate educational campaign was launched, the number of acceptors increased considerably in West Bengal. Similar results were obtained in a village study in Haryana State.[54]

Incentives

India has had a very intensive experience with financial and other kinds of incentives (often referred to officially as "compensation for loss of earnings") in relation to the family planning programme. About 22% of the family planning budget in India's 1969-74 Five Year Plan was designated for incentives, with most of the funds going to the sterilisation programme. Yet, surprisingly few studies have evaluated the demographic, economic, psychological, and ethical aspects of offering incentives for promoting sterilisation. Most of the research was conducted in Tamil Nadu State.

From 1956 to 1966, the Tamil Nadu Government changed its policy several times regarding papments to acceptors and canvassers. On the basis of two studies[55] on the effects of such changes and a few other related studies, Rogers[56] has made the following five generalisations about the role of incentives in diffusing family planning innovations :

1. "Adoptor incentives increase the ratio of adoption of an innovation." It may do so directly[57] and also indirectly by creating situations favourable for more intense and fruitful extension education.[58]

2. "Adoptor incentives lead to adoption of an innovation by different individuals than would otherwise adopt". The adoptors of an innovation usually have higher socio-economic status than non-adoptors. In two Indian studies,[59] it has been found that incentive-motivated adoptors of sterilisation have lower socio-economic status than non-adoptors.

3. "Although adoptor incentives increase the quantity of adoption of an innovation, the quality of such decisions to adopt may be relatively low, leading to limitations in the intended consequences of adoption." Among 297 vasectomised respondents in one study,[60] 43% stated that money was their "sole motivating factor" for adoption. In terms of age and marital status, 36.7% of these respondents need not have been vasectomised for purposes of birth limitation.

4. "Diffuser incentives increase the rate of adoption of an innovation by encouraging interpersonal communication about the innovation with peers.

5. "Although diffuser incentives increase the rate of adoption of

an innovation, the quality of the decision to adopt may be relatively low, leading to undesired consequences." One study[61] found that acceptors contacted by canvassers, when compared to those motivated by official family planning staff, were more likely to be motivated primarily by the incentive and to hold an unfavourable attitude after the vasectomy towards the procedure.

Rogers' suggestions for needed research regarding incentive schemes include the following: (1) investigation of the effects of an integrated combination of various types of incentives, such as offering individual incentives together with inputs and services that would be of community-wide value; (2) quasi-experimental, if not experimental, field studies in which various types of incentives are tested; (3) investigation of the cost-effectiveness of incentive control systems designed to insure "higher" quality adoption decision-making through which incentives have their effect.

Concluding Remarks

It is quite possible that some more recent important studies on sterilisation in India have not been taken into account in this paper. The omission is not intentional. I have tried to make the best use of all materials available to me in New York by the end of 1975.

Having dealt exclusively with sterilisation, the present discussion has not delineated the role and effectiveness of sterilisation within the total family planning programmes of India. Limitation of space is the main reason for this omission.

It is clear that great variations exist in the performance of sterilisation by time, locality, and sex, and that we cannot as yet explain satisfactorily all the variations. The different consequences are also unclear—and will remain so, unless further investigations, with improved and standardized methodology, are undertaken. Quite a number of Indian studies have been done on the basis of routine records kept on sterilised persons. Well-designed follow-up studies are very few in number. The purpose of this paper will be served if it can stimulate a few such research studies which would yield results useful to policymakers, as well as to social and biological scientists.

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EFFECT OF MIGRATION ON URBAN FERTILITY IN INDIA WITH SPECIAL REFERENCE TO GREATER BOMBAY

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Introduction

The fertility behaviour of migrants as a significant population group has not received sufficient attention from world demographers. Some studies have been carried out in different countries like the U.S.A., Mexico, Chile, Brazil, Puerto Rico, the Philippines, Taiwan etc., adding a new dimension to the study of urban fertility differentials as a consequence of varied residential backgrounds of migrants.[1] Implicit in such studies was the idea that migrants posses the social values and demographic characteristics of their place of origin at least till such time as they are assimilated into the new society. Studies of fertility differentials in relation to the residential background of the in-migrants are important both because of their utility in economic planning for the future and for family planners.

In India too as in other countries, fertility differentials exist between different population groups. Using census data upto 1951, Davis[2] found differentials in Indian fertility by caste, socio-economic, class, education and degree of urbanisation. Recently, Rele and Kanitkar[3] using survey data for Greater Bombay found that there were differences in fertility behaviour among migrants who had different residential backgrounds.[3] Further, Mathur[4] made an attempt to study the impact of rural-urban migration on fertility using the 1941 and 1951 censuses of India.[*]

Migration as an independent factor associated with fertility assumes that either (i) a change in residence acts as a determinant force on fertility or (ii) that family size affects social and economic factors influencing migration.[1] Virtually all research raising the question "Does migration influence fertility" ? has challenged demographers as it has many problems. In the case of India, it has been found that the migration streams in total migration are substantial for rural to urban and urban to rural and urban to urban migrants, if one excludes rural—rural migration, which is not important from the point of view of urban fertility.[5] Out-migration from urban areas to other areas may affect the fertility of both the place of origin and of destination. As mentioned earlier, the fertility of migrants from rural to urban areas is important because the rural pattern of child-bearing may affect urban fertility.

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[*] Seminar paper submitted to the International Institute for Population Studies, Bombay, 1974-75

Objective and methodology

The objective of the study is to examine the effect of different flows of migration on urban fertility, viz., urban-urban, rural-urban, and urban-rural. Correlation analysis has been used to measure the extent of relationship between different migration streams and levels of fertility in India. To analyse the contribution of migrants towards the fertility of Greater Bombay, we have used replacement rates as introduced by Hyrenius,[6] as an abridged form of the common annual net reproduction rate.

This study utilises migration data relating to India. For determining migration streams we have used the migration tables given in the 1961 census of India.[7] The 1961 General Population Tables of various states have also been used. Livelihood, civil condition and literacy tables by age groups of the sample population of reorganised states as given in the census of India 1951[8] were used as also social and cultural tables from the census of India 1961.[9] As the study required age specific fertility rates, these were obtained from the National Sample Survey.[10] Life table values were taken from the study on life tables for Greater Bombay done by Sastry[11] and Singh.[12]

However, this study has certain limitations One of them is that in the absence of any other index of fertility the marital child-woman ratio was used to analyse the relationship between migration streams and level of fertility. The accuracy of the results depends on the type of data used and the validity of the assumptions made.

Analysis and findings

A. Effect of migration on urban fertility

For the present analysis, the data on migration were classified into three broad groups namely non-migrants, urban migrants and rural migrants. "Non-migrants", are those born and staying in their respective places of birth, the term "rural migrants", refers to those who have stayed for most of their lives in rural areas (population below 5,000 with few exceptions, according to census of India), before migrating to urban areas, and the term "urban migrants" refers to those who have spent most of their lives in urban areas (population 5,000 or more with few exceptions, according to census of India), before migrating to the urban areas or rural areas. The intra and inter State flows of migration were calculated accordingly.

Marital child-woman ratios were also calculated from the census age sex distribution as a measure of urban fertility. This index has many weaknesses. The child-woman ratios suffer from (i) under-enumeration of children, (ii) the effect of mortality, i.e., infant and childhood mortality, and (iii) the effect of migration, i.e., the children may be separated from their mothers. The two child-woman ratios conventionally used involve children aged 0-4 years with married women aged 15-44 and children 5-9 years with married women aged 20-49. While the former suffers more from the first factor mentioned, the latter suffers from the second and third. As there is a significant rural-urban differential in mortality especially in the past and migration overwhelmingly affects the urban population, the former marital child-woman ratios were used in our analysis. Moreover, the use of the former marital child-woman ratios will be justified if the degree of enumeration of children is similar in urban and rural areas.

The relationship between different migration streams and urban fertility was studied by linear correlation, obtained by using rate of change in the marital child-woman ratio as the dependent variable. For the independent variable, three different female migration streams were identified during 1951-61, and since the impact on urban fertility was measured, these were related to urban females in 1951 by dividing by this number. The correlation coefficients were obtained for three migration streams for both intra and inter-states as given in Table 1.

TABLE 1

Correlation coefficients between marital child-woman ratios and migration streams

Migration stream		Linear
Urban-Urban	Intra-state	—0.01
	Inter-state	—0.52
Urban-Rural	Intra-state	—0.43
	Inter-state	0.50
Rural-Urban	Intra-state	0.09
	Inter-state	—0.58

Table 1 illustrates that the relationship between urban fertility and some migration streams though not large, is negative, indicating that urban fertility is reduced due to migration. This is true in the case of the linear relationship for the urban to urban flow for both intra and inter-state migrants, urban to rural flow for intra-state migrants and rural to urban flow for inter-state migrants.

It is difficult, if not impossible, to give some reasons for the negative relationship. Nevertheless, we have made an attempt to present some of them. In the case of rural to urban flow for intra-state migrants, the positive effect on urban fertility may be due to the fact that women migrate frequently to their rural homes due to reasons of proximity and may not have adopted urbanism as a way of life. Generally, rural migrants have higher levels of fertility as compared to non-migrants and this may be one of the reasons.[3] However, inter-state migrants may acquire urbanism as a way of life. When migration takes place from urban to urban areas the females may be migrating from a lesser urbanised area to a higher urbanised area and as the fertility of higher urbanised areas is lower, the migrating females may adopt the reproductive behaviour of the women of the higher urbanised areas. It is also true that urban women are better motivated to limit their family size. This is true of both inter-state and intra-state migrants. In the case of urban to rural migrations, as women migrate to rural areas after marriage for delivery, urban fertility may be negatively affected. This is more pronounced, in the case of intra-state migrants as the number of such migrant women is substantial.

B. *Impact of migration on fertility of Greater Bombay.*

As relatively better and more data are available for Greater Bombay, an effort was made to study the impact of in-migration on fertility by using the annual net reproduction rate which differs negligibly from true natural increase. While the net reproduction rate (NRR) considers the effect of mortality on age specific fertility rates and does not account for migration, the replacement rate considers the effect of mortality and migration on age specific fertility rates. This rate introduced by Hyrenius[6] was used in the present study along with net reproduction rate. Unfortunately, due to non-availability of data this could not be applied to other metropolitan cities.

The formulae used are:

$$\text{N.R.R.} = \sum_{15}^{44} b_x \frac{{}_5L_x}{l_0} \quad \text{where}$$

$b_x = \frac{ASFR}{1000} \times \frac{100}{205}$ and $\frac{5L_x}{l_0}$ can be obtained from an appropriate life table.

Replacement Rate $= f \sum_{0}^{10} K(x)\, f(x)$

where f = Sex ratio at birth
f(x) = Fertility rate at age x to x + 1

and $K_0, l_0 = k_0, l_0$

$K_{10,\ 15} = k_0, l_0, k_{10,\ 15}$

$K_{15,\ 20} = k_0, l_0, k_{10,\ 15}, k_{15,\ 20}$ etc.

where $k_0, l_0 = p^{(T+l_0)}_{0,10} \div F^{(T,\ T+10)}$

$k_{80}, 15 = p^{(T=l_0)}_{l_0,\ 15} \div P_0{}^{(T)}_{l_0}$

$k_{15,\ 29} = p^{(T+10)}_{15,\ 20} \div P^{(T)}_{5,\ l_0}$ etc.

Where $P^{(T)}_{5,\ x+5}$ denotes the female population in age group x, x+5 at time T and F (T, T+10) means the total number of live born females during the period T, T+10. This was obtained by using life tables for Greater Bombay and applying the reverse survival ratio method.

The result of the calculations shows that N.R.R. = 1.32 while R.R. = 1.03 during 1951-61. Since NRR is a generation rate whereas Replacement Rate is a period rate, we cannot compare these two directly. To make N.R.R. comparable with RR, a simple formula of compound interest is applied, i.e.,

$R = e^{rM}$

from which $r = \frac{1}{M} \log_e R$ ....(1)

where R = NRR
M = Mean age of mothers
r = Lotka's true rate of natural increase

Using the above relation (1) r = 1.1975 which can be compared with the replacement rate. This reveals a difference of 7.2% between the two indices which indicates that the percentage reduction in fertility of Greater Bombay due to migrants is 7.2%.

Dr. Zachariah constructed a distribution using general fertility rates, from which he found a 12% reduction in fertility due to migration. The vast difference between these two findings may be due to the fact that in his approach he considered several factors such as separation of migrant husband—wives, frequency of cohabitation and so on under certain assumptions regarding the parameters used and also due to a rough measure of fertility namely, the general fertility rate, utilised to compute the reduction in fertility, whereas the present attempt, uses annual net reproduction rates and replacement rates which are straightforward calculations and do not involve these assumptions at all

Conclusion

From the foregoing analysis it can be concluded that the three migration streams which were considered here do affect urban fertility. The correlation coefficient between migration streams and urban fertility is not very strong, but nevertheless, it sufficiently highlights the finding that rural to urban, urban to urban, and urban to rural migrations are inversely related to urban fertility in most cases.

In the case of Greater Bombay, the reduction in fertility due to migration as estimated by using replacement rates amounts to 7.2%, which shows that migration is an important factor for the low fertility level of Greater Bombay

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APPENDIX I

Changes in migration flows, intra and inter-State

State	Rural-Urban flow, 1951-61	Total urban female population, 1951	Urban-Rural flow, 1951-61	Total urban female population, 1951	Urban-Rural flow, 1951-61	Total urban female population, 1951
	Intra-state	Inter-state	Intra-state	Inter-state	Intra-state	Inter-state
Andhra Pradesh	0.20389	0.01381	0.05907	0.00598	0.07333	0.01963
Assam	0.18566	0.06124	0.05620	0.01292	0.10010	0.04172
Bihar	0.19919	0.04078	0.03393	0.00899	0.05970	0.02936
Gujarat	0.14106	0.02086	0.04795	0.00627	0.00848	0.02427
Jammu & Kashmir	0.06879	0.00937	0.02903	0.00545	0.05593	0.01942
rala	0.01370	0.00887	0.08588	0.01046	0.05730	0.01078
dhy Pradesh	0.14724	0.06151	0.07388	0.01851	0.01018	0.00728
dras	0.15134	0.01295	0.05114	0.00519	0.09293	0.01878
arashtra	0.14412	0.04901	0.05948	0.00541	0.08520	0.05277
Mysore	0.12716	0.03698	0.05263	0.00982	0.08573	0.03514
Orissa	0.23186	0.06787	0.09369	0.01691	0.01064	0.04929
Punjab	0.09547	0.01800	0.02777	0.00722	0.06032	0.02143
Rajasthan	0.08920	0.01536	0.03597	0.00855	0.05945	0.02455
Uttar Pradesh	0.11708	0.01292	0.04422	0.00528	0.00705	0.01968
West Bengal	0.08916	0.06411	0.02859	0.00370	0.06260	.02658
Delhi	0.00929	0.20586	0.00129	0.00160	0.05647	7995
Union Territories (except Delhi)	0.04600	0 049894	0.095503	0.05393	0.01399	0.0513

APPENDIX II

Urban marital child-woman ratios in India by State,* 1951 *and* 1961

State	1951	1961	Rate of change
Andhra Pradesh	633	730	0.1532
Assam	990	974	—0.0161
Bihar	879	809	—0.0796
Gujarat**	743	851	0.1453
Jammu & Kashmir	—	832	—
Kerala	889	988	0.1113
Madhya Pradesh	700	843	0.2041
Madras	660	758	0.1404
Maharashtra	743	803	0.0807
Mysore	734	843	0.1485
Orissa	1015	718	—0.2926
Punjab	1277	946	—0.2592
Rajasthan	662	867	0.3096
Uttar Pradesh	734	876	0.1934
West Bengal	733	796	0.0859
Delhi	1328	912	—0.3132
Union Territory (except Delhi)	801	908	0.1335

* (Children aged 0-4, married women aged 15-44 x 1000

** The figures for 1951 refer to the former Bombay State which consisted of the present Gujarat and Maharashtra States

Source· Reference Nos 8 and 9

PRESENT HOUSING SHORTAGE AND FUTURE HOUSING NEEDS IN INDIA, 1971–2001

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Introduction

Studies concerning the estimates of housing needs are still exploratory in nature and the need for further researches, particularly in the development of methodology for obtaining reliable estimates of the present and future housing needs, cannot be underestimated. Housing is an essential element of life just next to food and clothing, and a substantial proportion of the income of most families is spent on paying for the roof over their heads.

In India, some studies have been carried out which either deal with the structural aspect of housing[2] or with demographic, social and cultural factors affecting housing needs.[4] Notwithstanding the acute housing problems (both qualitative and quantitative) and also realising their enormity in perspective, no explicit attempt has been made to estimate the present shortage and the future housing needs in India. This may partially be due to non-availability of detailed information required for the purpose. However, of late, the Operations Research Group (ORG)[5], Baroda, has published a study entitled "A Long Range Perspective for India: Housing 2000 A.D.", in which an attempt has been made to review the current housing situation and projections of households have been made upto 2010 A.D. Also, the future housing needs have been estimated by assuming a certain level of economic development in conjunction with population growth. This report is mainly based on the data collected by ORG. The present study though apparently similar in nature, differs mainly in the methodological aspect. And the data have been taken from the Indian Census and NSS reports.

This paper estimates the present and future housing needs in India. These estimates have been derived by separately estimating the contribution of each major component of present and future housing needs. Also, the mean age of the house has been estimated. For these purposes, the population projections (based on medium-2 assumptions) given by Raghavachari[6] have been used.

Concept of Housing Needs

Housing needs have been considered in various ways. In connection with estimates for the United States for example, it has been stated that "an estimate of housing needs is nothing more than an indication of how much safe, sanitary acceptable housing we will need by some specified future date if all the families who will want housing are to have decent homes.[7] Unfortunately, the concept has not been defined in precise terms and therefore, these estimates are subject to statements about the desirability of certain housing conditions, such as : each household or family should have a separate dwelling, or the density of occupation should not exceed a certain level etc. These estimates would also depend upon the desired standard of dwellings. It would, therefore, be more appropriate if we define housing needs as the number of dwellings to be built, facilities to be provided and repairs or replacements to be done in order to maintain and/or improve housing conditions in conformity with nationally adopted standards.

The 1971 Indian Census defined a census house as "a building or part of a building, having a separate main entrance from the road, or common courtyard or stair etc., used or recognized as a separate unit. It may be inhabited or vacant. It may be used for residential or non-residential purposes or both." Here we are concerned with those houses, which have been used for residential purposes fully or partially.

The following may be considered as the major components of housing needs :

Components of present housing needs (shortage):

(i) The number of dwellings required for houseless population.
(ii) The number of dwellings required to provide separate dwellings for private households involuntarily doubled up with other households.
(iii) The number of dwellings required to reduce the density of occupation.
(iv) The number of dwellings required for private households living in unacceptable types of housing units.

Components of future housing needs:

(i) The number of dwellings required to house the increased population at some future date.
(ii) The number of dwellings required to allow for a reserve of vacant dwellings.

(iii) The number of dwellings required to replace those lost from inventory.

Of course, all the above components are not mutually exclusive and exhaustive. There may be overlapping of needs in some cases as for example components (1.ii) and (1.iii).

Dwellings required for houseless population:

According to the definition given by the UN "households without shelter are those households which, at the time of the census or other enquiry, are without a shelter that can be considered living quarters. They may be distinguished from households occupying premises not intended for habitation by the fact that the latter have managed to establish themselves in a place which provides them with shelter on a more or less continuous basis, whereas the homeless carry their few possessions with them, sleeping in the street, in door ways, on piers, or in any other space."

In 1951, the census enumerated 3.89 million houseless and institutional persons including about 1.47 million houseless and 2.42 million institutional persons. In 1961 this number slightly declined to 1.27 million houseless population and 2.08 million institutional population. However, the houseless population in 1971 increased over 1961 by 64% in Maharashtra, by 58 per cent in Orissa and by 56 per cent in Mysore. The estimated figure, in 1971 (based on some states' data) for all India worked out to 1.91 million

If we would have provided houses for all these houseless persons such that an average dwelling size of six persons per house was maintained then in 1971, the requirements for new houses would have been 318,000.

Dwellings required for households involuntarily doubled up with other households

One of the important aims of a housing policy is to create conditions which enable all households to have separate dwellings The simplest method in the present situation perhaps would be to compare the number of households with the existing number of occupied residential houses and then attribute the difference to the additional dwellings needed. In 1971, there were 90.7 million occupied houses in the country, of which 72.7 million were in rural areas and 18.0 million were in urban areas. The number of households per dwelling came down to 1,054 in 1961 from 1,140 in 1951 and increased to 1,107 in 1971. Table 1 gives the estimates of the additional dwellings which were needed in each census year beginning 1951 to 1971.

TABLE 1

Households, housing units, and dwelling requirements (1951-71)

(In Million)

Year	No. of housing units			No of households			Dwellings required		
	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
1951	12.8	60.6	73.4	10.3	54.1	64.4	2.5	6.5	9.0
1961	14.9	68.6	83.5	14.1	65.1	79.2	0.8	3.5	4.3
1971	20.9	79.6	100.5	18.0	72.7	90.7	2.9	6.9	9.8

Source . Various census volumes

Dwellings required to reduce the density of occupation (persons/room)

A widely recognised indicator of housing conditions is the average number of persons per room. An estimate of the number of dwellings that would be needed to bring down the density from a level 'd' to a level 'd_s', might be obtained as follows:

$$D = \frac{P_D - R_D \times d_s}{S_H}$$

where D=Dwellings needed in order to bring down the density of occupation from a level 'd' to a standard level 'd_s', P_D = Population living in dwellings, R_D = Rooms in dwellings, d_s = desired density of occupation, S_H = Average size of private households.

Based on a 20% sample, the 1961 census enumerated 86.237,583 persons in 16,710,667 households occupying 32,936,87 rooms. This gives an average of 2.6 persons per room and 5.2 persons per household. Had it been desired in 1961 to reduce this density (2.6 persons per room) to 2 persons per room, 1.5 persons per room and 1 person per room, then the additional requirements for dwellings would have been 19.58 million, 35.42 million and 52.25 million respectively. These requirements might have increased in 1971, because in 1971 the number of persons per dwelling has increased from 5.2 to 6.04.

It should, however, be noted that the number of dwellings required to eliminate undesirable sharing of the same dwelling would overlap with the number of dwellings required to reduce the density of occupation as the new dwellings which would reduce sharing would also reduce average density.

Dwellings required for private households living in unacceptable types of housing units

This component of housing needs reflects the number of households occupying living quarters which, because of their type can be readily identified as unfit for human habitation. Such dwellings are classified differently in different countries, as non-dwellings, huts, temporary tenements, provisional housing units, improvised houses like Jhuggi (in India and Pakistan), Sarifas (in Iraq), Gubak (in Indonesia), Grececondu (in Turkey) etc.[7]

The Indian census does not provide such data. Surveys conducted in different regions of the country give different estimates. One of the reasons may be the different definitions adopted. According to the report of the socio-economic survey of Asansol-Durgapur, 12 per cent of urban houses and 21 per cent of the rural houses were dilapidated i.e., were found far below the standard of human habitation. The slum survey of Gujarat indicated that 13 per cent of the houses in slum areas (urban sector) were not fit for habitation. Similar surveys on housing conducted in various parts of the country, estimated that the range of dilapidated structures varies between 9 to 15 per cent in urban areas and 17 to 25 per cent in rural areas. The Fifth Five Year Plan document indicates that 15 per cent and 25 per cent of urban and rural houses respectively are far below the standard of human habitation. The estimates given by NSS are slightly higher. (Table 2).

Table 2 shows that about 27% households in urban areas and 20% in rural areas live in housing units which are below normal standards. Thus it can be inferred that one-fifth of the housing stock needs replacement due to unacceptable conditions of housing, which gives an additional need of 15.84 million and 18.5 million dwellings in 1961 and 1971 respectively.

Dwellings required to house the increased population at some future date

In order to estimate housing requirements arising from the increase in population at a future date, it would, perhaps, be necessary to estimate the number of groups which would need separate dwellings. As a first approximation it can safely be assumed that the number of these groups is the same as that of private households. For this purpose, the projection of households carried out by the author[1] can be used. If we take these estimates of households which are based on constant headship rates, the additional requirement of houses would be 117 million upto 2001 with the assumption that each household occupies one dwelling.

TABLE 2

Distribution of Households and Population by Condition of Structure

Condition of structure	Distribution of households						Distribution of Population			
	Feb '63-Jan '64		Sep '61-July '62		July '60-Aug '61		Sep '61-July '62		July '60-July '61	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Excellent	6.59	18.28	7 24	19.37	6.30	17.99	7.70	20.49	6 64	18.25
Fairly good—needs no major repairs	65.99	63.26	64.88	58.89	60 48	59 88	66 12	59.81	63.04	61.02
Bad—dilapidated and improved	27.42	18.46	27 88	21 74	33.22	22 13	26.18	19.70	30.32	20.73

Source The Cabinet Secretariat, Government of India *National Sample Surveys* Nos 170, 150, 137

Secondly, we can directly assume future dwelling size and/or room size. Tables 3 and 4 give the number of dwellings and rooms required in future on assumptions of different densities of dwellings and rooms (for increased population only).

TABLE 3

Future Dwelling Requirements (in million)*

Decade	Projected total pop increase	Dwellings needed by assuming density of dwelling as			
		6 persons	5 5 persons	5 persons	4.5 persons
1971-81	121.28	20.21	22.05	24.26	26.95
1981-91	132.96	22.10	24.17	26.59	29.55
1991-2001	144.19	24.03	26.22	28.84	30.04

* As on March 1

TABLE 4

*Future Room Requirements**

Decade	Projected total pop increase	Number of rooms needed by assuming density of rooms as				
		3 persons	2.5 persons	2 persons	1.5 persons	1 person
1971-81	121.28	40.43	48.51	60.64	80.85	121.28
1981-91	132.96	44.32	53.18	66.48	88.64	132.96
1991-2001	144.19	48.06	57.68	72.10	96.13	144.19

* As on March 1

Dwellings required to replace those lost from inventory:

Following are the main reasons on account of which dwellings may be lost from inventory: (i) because of obsolesence (age); (ii) demolition in connection with slum clearance, reconstruction of towns, construction of industrial installations or other reasons such as the construction of dams etc., (iii) disasters, such as fires, floods, earthquakes, typhoons, accidents, etc.; (iv) dwellings falling out of use because of changed distribution of the population, or because of a preference for certain types; and (iv) converisons of dwellings for non-residential purposes.[7]

The number of housing units E(t) that will be required to replace those lost from inventory during a specific period (t) may be estimated as follows:

$$E(t) = (ru + u_1 + u_2 + u_3 + u_4)\ t$$

where

r = percentage rate of replacement due to housing units of an acceptable type becoming dilapidated beyond repair during the period 't'.

u = Total number of acceptable units at mid-year.

u_1 = Estimate of the number of acceptable housing units that will be demolished because of urban and other developments (such as slum clearance, reconstruction of highways, dams, etc.) during the period 't'.

u_2 = Estimate of the number of acceptable housing units that will be demolished or lost because of disasters during the period 't'.

u_3 = Estimate of the number of acceptable housing units that will fall out of use or be converted for non-residential purpose during the period 't'.

u_4 = Estimate of the number of acceptable housing units that will be lost because of small units being converted into fewer number of large units during the period 't'.

As data are not available in case of India on all these components, separate estimates have been obtained for some of the components.

(i) Estimation of dwellings to be replaced due to slum clearance programme:

On an average 5,500 housing units per annum were constructed under the slum clearance and improvement programme during the Five Year Plan period (Table 5). These constructions are assumed

TABLE 5

Construction under Slum Clearance Programme (in million)

Component	Houses constructed			
	Second Plan	Third Plan	Three annual Plans	Three years of Fourth Plan
Slum clearance and improvement programme	0.021	0.032	0.016	0.014
Annual rate of construction	0.004	0.006	0.005	0.005

Source : B. Bhaskara Rao, "A Large Range Perspective for India : Housing 2000 A.D' ORG, Baroda, 1975, p. 36.

to represent replacements for dilapidated houses in the slums. Projections of demolitions for slum clearance for the coming three decades are worked out on the assumption that the current rate of demolitions will continue. Thus, 55,000 demolitions are expected in each decade.

(ii) Estimation of dwellings to be replaced due to deterioration by aging of houses:

In order to estimate this component, the percentage rate of the housing stock to be replaced annually should be known. For this, we need the mean age of dwellings, which is estimated as follows:

Estimation of mean age of dwelling: The 18th round of National Sample Survey (NSS) provides data on distribution of households by the age and condition of house which has been classified into three categories, namely, (i) excellent, (ii) fairly good and needs no major repairs and (iii) bad, dilapidated and improvised. The houses in category three should be replaced and we treat them as dead houses because they are below standard for human habitation. We assume one of the following two assumptions.

(i) Each household should occupy one house, or
(ii) The distribution of households and houses are same by age and condition of house.

However, suppose $n^s x$ represents the proportion of bad, dilapidated and improvised houses in the age group of house $(x, x+n)$ to total houses in this age group, then the average age at which the house will be bad, dilapidated and improvised is equal to $\sum n(1-n^S x)$. But this proportion $n^s x$ includes those houses also which are originally dilapidated i.e., some of the houses are not dilapidated due to aging. Hence the proportion $n^s x$ has been deflated by 30 per cent below age 5; by 25 per cent in age (5-10) and by 15 per cent in age (10-15), which gives the proportion of houses dilapidated due to aging in each group. Let this proportion be denoted by $n^S x$. So the mean age of the house is equal to $\sum n(a-n^S x)$.

In this way the estimated average age of houses for urban and rural areas works out to 65 years and 55 years respectively in the year 1963-64. So it can be assumed that the present stock of housing should be replaced fully within 50 years i.e. at a rate of 2 per cent per annum of the present stock.

In 1971, out of a total of 90.74 million dwellings, 18.15 million houses were sub-standard for human habitation i.e. 72.59 million houses were of acceptable standard. This stock (72.59 million houses) should be replaced within 50 years i.e. 14.52 million housing units by

1981; 29.04 million housing units 1991 and 43.56 million housing units by 2001 should be replaced out of the existing stock in 1971. The houses built after 1971 will also be dilapidated during 1971-2001, due to aging, but at present this factor has been omitted.

Dwellings required to allow for reserve vacant dwellings:

Normally there is a certain proportion of the housing inventory which is inactive. It consists of dwellings which are vacant because they are either for sale or for rent or because they are being held off the housing market for other reasons, and dwellings which are vacant such as guest houses, town-halls, etc. Besides providing for households and families who occupy more than one dwelling, these inactive dwellings permit a certain amount of choice in the selection of dwellings and increase the mobility of the population.

Table 6 gives the vacancy rate (percentage of vacant houses to total houses) in 1971, for various states of India.

Further data for Rajasthan State reveal that out of the vacant houses, 87 per cent are in rural areas and 13 per cent are in urban areas, which reflects a greater incidence of vacant houses in the rural areas even after making allowance for the fact that the rural population is almost five times as large as the urban This, too, is perhaps, indicative of growing urbanization as most of the districts of Rajasthan State shows a decrement in urban vacancy rate in 1971 from 1961.

TABLE 6

Per cent Vacant Houses in Various States of India (1971)

State	Vacancy Rate	State	Vacancy Rate
Andhra Pradesh	6.0	Meghalaya	4.0
Assam	N.A.	Mysore	8.0
Bihar	3.4	Nagaland	4.0
Gujarat	10.3	Orissa	4.7
Haryana	5.9	Punjab	6.7
Himachal Pradesh	8.6	Rajasthan	12.7
Jammu & Kashmir	8.6	Tamil Nadu	7.0
Kerala	7.1	Tripura	2.5
Madhya Pradesh	5.4	Uttar Pradesh	5.0
Maharashtra	8.1	West Bengal	3.6
Manipur	3.2		

Source : Director of Census Operations, Rajasthan 'Census of India, 1971," Series 18, *Housing Reports and Tables*, Part IV, Rajasthan

From the very term "Vacant Houses" one may be led to believe that the house is vacant because a tenant is wanting and would hasten to conclude that a higher vacancy rate indicates greater availability of houses. But it may actually not be so because the houses that have been categorised as vacant as per the census are termed 'vacant' not only for want of tenants but on certain other also grounds e.g. if it is dilapidated, or is vacant on account of incomplete construction, etc.

In case of Rajasthan, the 12.7% vacant houses constituted 0.93 per cent in want of tenants, 0.40 per cent dilapidated; 0.20 per cent under repair; 0.09 per cent under construction and 11.03 per cent vacant due to other reasons. Hence, the vacancy rate for India in 1971 can be considered as 0.50 per cent of the total houses in the sense that these vacant houses could be occupied whenever needed. Further, for India, a one per cent vacancy rate can be considered as desirable and 0.50 per cent as workable. In Sweden a reserve of 2% of total dwellings is estimated for urban areas and in the U.S.A. a reserve of 4% is estimated for a non-farm population.[7] In order to estimate the dwellings needed due to this component, the estimate of the total dwelling requirements (in the absence of vacancy component) at time 't' may be multiplied by the planned vacancy rate

Summary

Housing needs have been considered in various ways and its estimates have been subjected to normal housing conditions. There are two major components of housing needs—shortage and future housing needs. The estimates of present housing needs largely depend on the desirability of certain housing conditions. If it is desired that every household should have a separate dwelling, the housing shortage works out to 9.8 million in 1971. Further, housing the houseless population and replacing dwellings of unacceptable standard, add a shortage of another 20.41 million dwellings. The three factors together give a housing shortage of 30.21 million in 1971.

The estimates of future housing needs also depend on objectives of housing policy. If the object is to house the increased population at some future date holding the present house size (average number of persons per house) constant, then 66.40 million housing units should be built by 2001. Further, if it is desired that the dwellings lost from the inventory due to aging should also be replaced, this component adds a requirement of 43.56 million dwellings by 2001. To summarize, the total number of dwellings required by 2001 is 109.96 million, of which 30.20 million were short in 1971 and 66.40 million are required to house the increased population during this period.

From these estimates of housing needs, it is clear that housing is an acute problem in India. Housing, or provision of shelter, must be regarded as one of the most important of public utilities and social services—an indispensable necessity of life—and it should be attended to as an integral and essential part of national, social and economic planning. Special measures are required to cover up the present housing shortage and to keep pace with future housing requirements.

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CORRELATION OF AMENORRHOEA WITH AGE, PARITY AND LACTATION

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It is believed that the post-partum period of amenorrhoea, is a period of temporary sterility, during which the probability of conception is very low. Sehgal and Singh[1] arrived at a pregnancy rate of 8.9 per 100 years of exposure during this period, which is considerably lower than that obtained even during the use of temporary contraceptives. Karkal[2] has suggested that the higher inter-live birth intervals for Indian women as compared to corresponding non-contracepting couples in Western countries may be attributed to the long periods of post-partum amenorrhoea in the former. Lactation may increase the period of post-partum amenorrhoea. In the United States, the post-partum amenorrhoea period was observed to be about 5-6 months[3] for live births as compared to Tietze's figures[4] of 3-12 weeks as the mean duration of post-partum amenorrhoea for non-lactating women of different ages (Western). The present study seeks to find out the relationship of post-partum amenorrhoea with age, parity and lactation.

Material and Methods

Five hundred and thirty five married women of reproductive age (15-44 years) residing in the slum areas of Sunderpur, Sarai Nandan and Adityanagar in Varanasi, were interviewed in their homes. (These areas constitute the field practice areas of the author's Department). The interviewer had a sufficiently strong rapport with the community to enable him to obtain detailed reproductive histories including the period of lactation and post-partum amenorrhoea for each viable child delivered. As many as 2,049 deliveries occurred during the survey period. The error due to recall was minimised to the fullest extent possible by listing important events for which the respondents had a strong memory and attachment in a calendar. This was used to elicit information about the dates of various obstetrical events with a fair degree of accuracy. The age of the mother was recorded in completed years for each delivery. Simple correlation co-efficients and first order partial correlation co-efficients were worked out in order to quantify the inter-relationships of the various factors studied

Results and Discussion

The average period of post-partum amenorrhoea was observed to be 8.8 months (Table 1) and the maximum period, 9.8 months, in women aged 30-34 years.

TABLE 1

Relationship between age and length of amenorrhoea

Age in years	Number of live births	Length of amenorrhoea in months
15 - 19	536	8.0
20 - 24	682	8.6
25 - 29	481	9.4
30 - 34	261	9.8
35 - 39	74	8.6
40 - 44	15	7.8
Total mean	2,049	8.8

Chandrasekharan and Murty[5] have reported mean values of 10-11 months in Ramnagaram, Dandekar[6] obtained figures of 13-14 months in a survey of a rural community, while Potter et al,[7] reported 10.8 months for women of villages around Khanna. This period of post-partum amenorrhoea is quite lengthy as compared to that in developed countries, for example, it was only 6.5 months for two agricultural villages in Gunma prefecture of Japan.

This long duration of post-partum amenorrhoea can also be one of the factors for the sufficiently long inter-live birth interval (28.4 months) observed in the present study. A look at Table 1 shows a positive relationship between age and amenorrhoea except for a dip in the age groups 35-39 years and 40-44 years. This is significant as judged by the simple correlation coefficient of 0.068 ($P > 0.01$) though the first order correlation coefficient between age and period of amenorrhoea with the lactation period as constant, was not significant ($r = 0.029$; $P > 0.10$). This showed that age and the post-partum amenorrhoea period are not strongly related.

The mean duration of post-partum amenorrhoea increased with parity from 8.1 months for para 1 to 10.1 months for para 5, after which it gradually decreased to 7.2 months for mothers of parity 8 and above (Table 2). A similar trend was observed in Krishnamoothy's study[8] where the mean amenorrhoea period increased upto parity 5-6 (16.36 months) and then declined to 9.0 months for parity 9 and above. Karkal[2] found that this duration increased from 4.9 months for women of parity one to 11 months for those of parity 5. The simple correlation coefficient between parity and amenorrhoea was found to be insignificant ($r = 0.005$; $P > .80$). Hence, no linear relationship between amenorrhoea and parity was indicated.

TABLE 2

Relationship between parity and length of amenorrhoea

Parity	Number of live births	Mean length of amenorrhoea in months
1	482	8.1
2	409	8.7
3	339	9.2
4	261	10.0
5	203	10.1
6	148	8.7
7	95	7.5
8 and above	112	7.2
Total	2,049	8.8

Several studies have attempted to relate the period of lactation with that of post-partum amenorrhoea,[9, 10]. Tietze[4] felt that lactation is the most important determinant of the duration of post-partum amenorrhoea. In the present study a concomitant increase in the length of post-partum amenorrhoea was observed with increasing periods of lactation (Table 3). The mean length of amenorrhoea was 3.2 months for women who lactated upto six months. This increased to 17.6 months for women who lactated beyond 36 months. This is strongly corroborated by the positive simple correlation coefficient of 0.595 ($P < 0.001$) and first order partial correlation coefficient between amenorrhoea and lactation holding age as a constant as 0.592 ($P < 0.001$). There does not seem to be much difference in the relationship between the two variables—period of lactation and of post-partum amenorrhoea, as per the simple correlation

TABLE 3

Relationship between period of lactation and length of amenorrhoea

Period of lactation in months	Number of live births	Mean length of amenorrhoea in months
0 - 6	466	3.2
7 - 12	304	5.6
13 - 18	485	7.5
19 - 24	170	12.0
25 - 30	342	12.4
31 - 36	127	15.6
Above 36	155	17.6
Total	2,049	8.8

TABLE 4

Simple correlation coefficient between 4 variables and first order partial correlation with amenorrhoea period as dependent variable

	Amenor-rhoea	Lactation	Parity	Age
Amenorrhoea	1,000	0 595	0 005	0.068
Lactation		1 000	0 031	0.074
Parity			1 000	0.800
Age				1 000

Independent variable	Variable held constant	Correlation coefficient
Lactation	Age	0.592
Age	Lactation	0.029

co-efficient (0.595) and first order partial correlation coefficient (0.592). This indicates a strong relationship between the length of amenorrhoea and of lactation. This relationship is of considerable importance in studies on fertility as pointed out earlier, due to the probability of low conception during the post-partum amenorrhoea period.

Summary

The present study was conducted with 535 currently married women in the reproductive age group in a slum area of Varanasi to study the relationship of amenorrhoea with age, parity and lactation. Amenorrhoea and age were found to be significantly related as shown by the simple correlation coefficient of 0.068 ($P < 0.01$). No relationship between amenorrhoea and parity was found while amenorrhoea and lactational period were strongly related as indicated by statistical tests, when age was taken as a constant.

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DIFFERENTIAL FERTILITY BY STERILSED AND NON-STERILISED COUPLES

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Introduction

One of the objectives of family planning programmes is to encourage couples in the reproductive age group of 15-44 years to use some method of his/her choice to space or prevent the next pregnancy. But, the use of conventional contraceptives may not be a sure method of preventing birth as in most cases it is not used effectively, particularly by rural couples. Also, in most cases, continuity of use is not maintained. In these circumstances, the most effective and popular method of controlling fertility in rural areas is either vasectomy or tubectomy, which are readily done in Primary Health Centres or Hospitals, and are accelerated through short duration vasectomy camps held at various times during the year.

Over the years a number of studies[1, 2, 3] have been conducted in different parts of India, on the socio-economic and demographic characteristics of vasectomy or tubectomy acceptors. However, very little is known about the fertility differentials among sterilised and non-sterilised couples. The work of Rele and Patankar[4] on fertility differentials of contraceptors and non-contraceptors shows that the average number of surviving children is higher among families which accepted contraception than among the general population. They also observed that the practice of birth control is generally lower among women who have lost their last child. In this paper an attempt has been made to study the fertility differentials among sterilised and non-sterilised couples.

Sample

Data was collected through a questionnaire administered by Integrated Multi-purpose Health Workers, both male and female, from a random sample of 10 per cent (4,606) households from 52 villages of Miraj Taluka of Maharashtra State. The survey was conducted in the first quarter of 1974 to establish baseline data on different health aspects of the people living in these villages as a part of the Integrated Health Services Project.

Results and Discussion

The study included 3,418 mothers who were in the reproductive age of 15-44 years. Out of these couples, 1,103 (32.3%) were under family planning protection, 1,032 (30.2%) through sterilisation and 71 (2.1%) through conventional contraceptives. Of the former, 36.8% were acceptors of vasectomy and 63.2% of tubectomy. The break-up of the 71 couples who were practising conventional methods was 61 (85.9%) using condoms, 5 (7.0%) using the IUD, 2 (2.8%) on steroidal injections (DMPA) and 3 (4.3%) on the once-a-day pill.

The majority (67.7%) of the women had never used a family planning method, while a very small proportion (0.5%) stated to have used some conventional method in the past. These latter 17 couples have been classified as "never users" for the purpose of this study as the duration of use was not available.

Age at consummation and age at sterilisation of sterilised couples

The age at consummation was as early as 14 years or less for 44.8% of the 1,032 sterilised couples. In general, 96.1% of the marriages had been consummated before the women reached 20 years of

TABLE 1

Distribution of sterilised couples by wife's age at consummation and age at sterilisation

Age at consummation (years)	Age at sterilisation (years)						Total	Per cent
	15-19	20-24	25-29	30-34	35-39	40-44		
10-14	16 (3.46)	110 (23.81)	166 (35.93)	116 (25.11)	48 (10.39)	6 (1.30)	462 (100.00)	44.77
15-19	4 (0.76)	103 (19.43)	194 (36.60)	146 (27.55)	68 (12.83)	15 (2.83)	530 (100.00)	51.36
20-24	—	—	10 (30.30)	13 (39.40)	10 (30.30)	—	33 (100.00)	3.19
25-29	—	—	—	1 (14.28)	2 (28.57)	4 (57.15)	7 (100.00)	0.68
Total	20 (1.94)	213 (20.64)	370 (35.85)	276 (26.74)	128 (12.40)	25 (2.43)	1032 (100.00)	100.00

Note: Average age of wives at consummation = 16.38 years
Average age of wives at sterilisation = 29.21 years
Average age of husbands at sterilisation = 36.96 years

age and 3.9% at 20 years or more. An analysis of the age at sterilisation showed that about 2.0% of the couples were sterilised at the very early ages of 15-19 years, the majority (56.5%) in the most fecund ages of 20-29 years, and 41.5% when they were 30 years or more.

It was observed that a higher proportion of the couples who had consummated their marriages earlier had a longer effective married life than those who consummated at later ages. The average age of the wife at consummation was 16.4 years while the average ages of the husband and wife at sterilisation were 29.2 and 37.0 years respectively (Table 1).

Age at consummation and present age of non-sterilised couples

The distribution of non-sterilised couples by their age at consummation and present age shows that out of the 2,315 non-sterilised couples, 39.5% consummated their marriages within 14 years of age, 56.0% between 15-19 years of age and 4.5% when they were 20 years or more. Their present age distribution showed that 2.7% of the couples were between 15 and 19 years old, 54.2% were 20-29 years, 41.9% were between 30-39 years and only 1.2% were aged 40 years or more. The average age of the wife at consummation in this group of couples was 16.9 years (Table 2).

TABLE 2

Distribution of non-sterilised couples by wife's age at consummation and present age

Age at consummation (years)	Present age (years)							
	15-19	20-24	25-29	30-34	35-39	40-44	Total	Total Per cent
10-14	45 (4.92)	251 (27.46)	361 (39.50)	99 (10.83)	145 (15.86)	13 (1.43)	914 (100.00)	39.48
15-19	17 (1.31)	209 (16.12)	411 (31.73)	482 (37.19)	171 (13.19)	6 (0.46)	1296 (100.00)	55.98
20-24		2 (2.41)	21 (25.30)	32 (38.55)	21 (25.31)	7 (8.43)	83 (100.00)	3.59
25-29				14 (63.64)	6 (27.27)	2 (9.09)	22 (100.0)	0.95
Total	62 (2.68)	462 (19.96)	793 (34.25)	627 (27.08)	343 (14.82)	28 (1.21)	2315 (100.00)	100.00

Note : The figures in parentheses represent percentages
17 couples who were past users of conventional contraceptives are included here

Number of children everborn and living to the sterilised couples

A distribution of the average number of children born to the sterilised couples by their age at sterilisation showed that at the time of sterilisation the younger women had fewer children'than the older women because the effective married life for the latter group of women was obviously much more than that of the former.

A comparison of the average number of children born and living to the couples at the time of sterilisation, however, indicated a very low mortality rate of children born alive to couples who had accepted this method at a younger age than those who underwent sterilisation at a later age, with an exception in the 35-39 age group. (Table 3).

TABLE 3

Average number of children everborn and living and by age at sterilisation and percentage of deaths among liveborn children

Age at sterilisation (years)	Number of children		% of deaths
	Everborn	Living	
15-19	2.47	2.35	4 86
20-24	3.61	3.25	9.97
25-29	4.57	3.97	13.13
30-34	5.69	4.80	15.64
35-39	6.10	5.37	11.97
40-44	6.12	4.56	25.49
Total	4.88	4.19	14.14

Hence, lower mortality among the live born children might motivate some couples to undergo sterilisation earlier while a higher proportion of deaths might delay such a decision in others.

Number of children everborn and living to the non-sterilised couples

A distribution of the number of children born to non-sterilised couples by their present age showed a lower average number of children born to them than to the sterilised couples at all ages (Table 4). Again, the proportion of deaths among the live-born children of the non-sterilised couples showed a higher death rate than among children of sterilised mothers in almost all the age groups except the 40-44, where the children of sterilised couples had a higher death rate (25.5%) than those of non-sterilised couples (14.6%).

TABLE 4

Average number of children everborn and living to non-sterilised couples by present age and proportion of deaths among their liveborn children

Present age (years)	Number of children		% of deaths
	Ever-born	Living	
15-19	0.49	0.44	10.20
20-24	1 46	1.31	10.27
25-29	2.98	2.26	24.16
30-34	4.18	3.35	19.85
35-39	5.09	4.30	15.52
40-44	5.63	4.81	14.56
Total	3.70	3.03	18.11

Effective married life of the sterilised and non-sterilised couples

Table 5 shows the duration of effective married life of the sterilised and non-sterilised couples and the average number of children born to them. The average duration of effective married

TABLE 5

Distribution of sterilised and non-sterilised couples by years of effective married life

Effective married life (years)	Couples	
	Sterilised	Non-sterilised
<1	—	49
1-4	123	368
5-9	317	570
10-14	327	356
15-19	196	310
20-24	63	371
25-29	6	291
Total	1032	2315
Average effective married life (in years)	12.8	13.9
Average children everborn	4.88	3.70

life for the former group was 12.8 years while for the latter it was 13.9 years. But, the performance in terms of live births was 4.9 for the sterilised as compared to 3.7 for the non-sterilised couples. This leads us to believe that couples who have children more frequently are likely to be motivated for sterilisation than those who have them less frequently. In other words, the fertility of the sterilised couples was higher than that of non-sterilised couples.

Conclusions

The analysis revealed the following salient points

1. Thirty per cent of the eligible couples in the sample were sterilised while another 20% were using conventional methods.
2. The average number of children born and living to the sterilised couples was 4.9 and 4.2 respectively with about 14% deaths among their live born children. The corresponding figures for non-sterilised couples were 3.8 and 3.0 with about 18% deaths among the live born children.
3. The average ages at consummation of the sterilised and non-sterilised groups were 16.4 and 16.9 years respectively and did not show much variation.
4. The average effective married life for the sterilised and non-sterilised couples was 12.8 years and 13.9 years respectively. But, the average children everborn to them was 4.9 and 3.7 respectively.
5. The fertility of the sterilised couples, was 31.9% higher than that of non-sterilised couples. But, after adjustment for duration of effective married life, the fertility increased to 43.0%.

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A STRATEGY TO ATTACK SICKNESS

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The integrated approach to health delivery is now recognized as the logical means of taking medical care to the people, but unfortunately, so far, it exists more on paper than in reality.

In India, where 80 per cent of the population still lives in villages, the problems of education, communication and medical care are particularly challenging and development of better methods of health delivery acquires greater importance.

Essential components of any health programme are adequate coverage of population, suitable training for workers and reasonable facilities in the form of medicines and first aid equipment. The top priority is to meet the basic need of the people—treatment of illness. Until this need is satisfied, they will not listen to any health or family planning advice. How can a person be motivated in health education or family planning if his illness cannot be looked after ?

Long term planning of health has to be basic, comprehensive, preventive and promotive. In view of the high rate of mortality and morbidity, services for young children and mothers demand the highest priority. With a life expectancy of about 50 years, a mother must bear five children to ensure one surviving son. The chances of a newborn Indian reaching the age of five are about the same as those of a child in the developed world reaching 55 to 60. The infant mortality rate is about 110 per thousand and under-four mortality is 40 per cent. The major causes are malnutrition, diarrhoeal disorders, respiratory problems and communicable diseases. More than half the pre-school children suffer from moderate to severe malnutrition.

Family planning and health are inter-related. Mothers who manage to keep most of their children alive have fewer subsequent births, while infant mortality reduces the acceptance of family planning significantly.

There are advantages in an integrated package of nutrition, health and family planning programmes since they are all aimed at the same target groups, women and children. They employ workers with similar skills and they develop a similar delivery system.

Such services must be taken to the people in the community, whether rural or urban. We need to develop the integrated approach not only within the institutional framework of hospitals and health centres, but also in village homes. This will involve acceptance of the concept of a front line worker who will provide for the individual and the community the basic elements of health care, which involve treatment of simple problems, referral of complex cases to a higher level, and preventive and educational measures.

In a developing country like India we can never afford enough specialists and doctors to cover the population, nor is it necessary. Most of the problems are minor and can be managed by well-trained auxiliaries in the community. What is important is to have the front line workers, by whatever name one wants to call them, and train them to deal with the common problems, both curative and preventive. Ten common illnesses could be identified and training given to manage these, together with preventive and promotive aspects of health.

The role of the doctor is more that of organiser, planner, trainer and supervisor than practitioner. The attitude of the doctor will have to change from treatment of disease to promotion of health and this will require a vital change in priorities and methods of teaching. Teaching will have to be conducted in the community and away from the hospital. Health workers will have to learn more about the health of the community than about individual illness.

Some rural infrastructure already exists in India in the form of about 5,000 primary health centres and about 34,000 sub-centres. Each PHC cares for about 100,000 people. Staff allocated to both types of facility is far from adequate as each health worker is responsible for about 10,000 people. When a worker finds he has too much to do and cannot cope, he often loses motivation and just gives up. Funds provided for centres work out at less than 1 rupee per person per year for medicines, dressings and other supplies. This is not sufficient to buy even a few aspirin or suphanamide tablets, so most illness goes untreated.

Balwadis or children's centres under the Ministry of Education and Social Welfare are another means of taking health care to the people. There are about 6,000 of these run by workers who have a year's training in co-ordinating health, nutrition, education and social welfare at field level. Workers look after children for a few hours in the **balwadi** and through the children can reach out to families in the community.

The Indian government has inaugurated integrated child development service centres and 30 are to open this year. The main beneficiaries will be children under six and their mothers. The centres will provide supplementary nutrition and nutrition education, immunization, health check-ups and pre-school education. Pregnant mothers will be immunized against tetanus.

Despite these efforts the basic problem of the front line village level worker still remains unsolved and his role undefined. The front line worker should be a person who belongs to the village and is accepted by the people. A primary school teacher would be a useful person, but there could be others, such as a village elder or shopkeeper, or anyone else. His training should include a few simple tasks which cannot and need not await a visit to the sub-centre, often some distance away.

The worker could, for example, diagnose dehydration in a child with diarrhoea, give electrolyte powder or tablets to make up the fluid for oral hydration; treat cuts and wounds, sore eyes and skin conditions. Training should include simple aspects of preventive care and nutrition, adequate supervision and provision for retraining. Workers must clearly understand which cases to refer to the sub-centre or PHC, from where the more difficult problems can be sent to the district hospital.

In this context it is important to use resources to the utmost. There are probably 400,000 practitioners of indigenous medicines, most of them in rural areas. With some motivation and training they could be made our front line workers. The same is true of the **dai** or traditional birth attendant, who is also general family helper during the birth and post-partum periods. She could be suitably trained to be more effective and useful, thus reducing the hazards of maternal and neonatal deaths.

Medical colleges can play an important role. Each of these (there are about 110) could adopt an urban and a rural area, and use it for training and service. This again would have to be an integrated programme in which departments of paediatrics, preventive and social medicine and obstetrics would be the main partners. At present, medical interns are posted for three months in a rural area. This could be more meaningful with better on-the-spot training and supervision.

COMPARATIVE FAMILY PATTERNS IN RURAL AREAS OF SELECTED STATES IN INDIA[*]

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Introduction

Indian society remains predominantly rural with three-fourths of its population still living in the villages. Rural India represents the true picture of India. Many authors claim that the Indian family system is predominantly joint. It is difficult to agree or disagree with the above statement due to the limitations in the data used in the present study. The Indian family systems are not static, however, nor have they been so, in the past. All the various types of families have existed in the past and it is only their relative proportions which have changed over time. However, there is no statistical evidence to support this. Families change with changes in their internal structure like the addition of new members, and the passing away of older ones. This somewhat coincides with the theory of the "developmental cycle of domestic groups" as enunciated by William J. Goode.[1] Families also change with conditions external to it, like social, economic and demographic environment. The present study[**] deals with existing structures of families in rural areas of selected states in India.

Objective of Study

The first objective of this paper was to study the different family structures prevailing in rural areas of selected states in India and establish the type of family which is preponderant in a given region or state. Finding the proportions of the different types of families in these areas to be different, the second objective was to pinpoint the underlying causes for such regional variations.

The hypothesis put forward in the present study is that with improvements in socio-economic conditions family types tend to change possibly resulting in the disintegration of the joint family system in India.

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[*] This is a summary of the seminar paper submitted to the International Institute for Population Studies, Bombay, as a part of the requirements for the Certificate Course, 1971-72

[**] The present study is based on the methodology adopted by Joginder Kumar in his work on 'Family Structure of Hindu Society of Rural India' (to be published in) *Family in India*: Structure and Change, ed. George Kurian University of McGill Press This paper has been frequently referred in the text.

The assumption employed in the paper is the same as that used by Shahani,[2] which is: "The traditional assumption behind such a deduction is that every Hindu family is normally a joint family. Such an assumption has been encouraged by the study of Hindu law and scriptures, where the normative Hindu family is always joint".

Source of data

The data used in the present study is drawn from village survey monographs. During the 1961 census operations, about 30-40 villages were selected in each state, where information regarding the social, economic, political and demographic characteristics of the villages were collected, giving an insight into the rural life of India, The present study excludes all tribal dominated villages because tribal communities do not necessarily follow the traditional system of Hindu or Muslim families. Villages having predominantly Muslim populations have however, also been included.

The selected states for study on the basis of availability are Andhra Pradesh, Mysore, Gujarat and Rajasthan. Joginder Kumar[3] has already covered the Union Territory of Delhi, and the states of Madras and Uttar Pradesh.

The data from the village survey monographs is limited to information on households by type and size of family, and of the population by size of family. The above available data has, therefore been used for the purpose of the present study.

The classification of families adopted by the 1961 census differs from the sociological classification in that the former is based on the pattern of residence and hence suffers from many drawbacks. The census category of a "simple" family fits into the category of "nuclear" family. The other three categories however, do not conform to the classification given by Joginder Kumar. Some of the drawbacks of the census classification are as follows: the nuclear family consists of ego, his wife and unmarried children. If one of the parents dies, the family continues to perform almost all the functions and maintains itself as it did before, though in the census classification which does not follow the functional approach, this family would be included in the category of 'others'. Similarly, examples of joint and intermediate families are cited. Also families which are nuclear as per their residential pattern but not so functionally, would be classified as "simple" families in the census. Similarly, others may be joint residentially but not so functionally. The census classification does not consider the rules of residence, may it be patrilocal, matrilocal or bilocal. The census has adopted the above classification on the basis of comparability of data, where the enumerator's judgment is exercised to a minimum. But, it becomes difficult to describe the family structure in meaningful terms on this basis.

One of the important criteria of a joint family is the holding of common property which might be held jointly when the individuals live in nuclear families or vice versa. The village monographs do not contain information such as ownership of common property, processes of decision making or authority pattern of joint families, which would have enabled a better interpretation and analysis.

In order to simplify the analysis of family data two broad categories of families were made—"simple" families equated to nuclear families and "joint" families consisting of joint and intermediate families of the census classification. An "intermediate" family performs almost all the functions of a joint family and was therefore included under this category for the present analysis. Other types of families which do not come under the above two categories were classified in the 'other' category of the census classification.

TABLE 1

Summary data on family structure in rural areas of selected states of India, 1961

State	No of villages	Distribution of families by type				
		Simple	Intermediate	Joint	Others	Total
Andhra Pradesh	13	606	157	250	325	1338
Mysore	22	3498	1212	1228	697	6635
Gujarat	7	625	187	212	19	1043
Rajasthan	17	835	272	429	31	1567

State	No of villages	Percentage distribution of families by type				
		Simple	Intermediate	Joint	Others	Total
Andhra Pradesh	13	45.29	11.73	18.69	24.29	100.00
Mysore	22	52.72	18.27	18.51	10.50	100.00
Gujarat	7	59.92	17.93	20.33	1.82	100.00
Rajasthan	17	53.28	17.36	27.38	1.98	100.00

Analysis of Data

The family structure, size of family and population by size of family have been discussed for the selected villages* of the states of Andhra Pradesh, Mysore, Gujarat and Rajasthan.

Table 1 summarises the data on family structure in the rural areas of these four states. All the four states have interesting contrasts of family structure and size, and hence various summary measures for individual states have been presented in the next three tables.

Table 1 shows that while 45% of the families in Andhra Pradesh and 53% each in Mysore and Rajasthan were nuclear. Gujarat had the highest proportion of such families (60%). In general, about half of the families in the rural areas of the above regions were nuclear. Andhra Pradesh had the lowest number of "joint" families (30%) followed by Mysore (37%), Gujarat (38%) and Rajasthan (45%) which had the highest proportion. The "other" category of families was 24% for Andhra Pradesh, 11% for Mysore and 2% each for Gujarat and Rajasthan.

Tables 2 and 3 provide data on the types of families by size and distribution of population by size of family respectively.

The average size of the family was over 5.3 in all the areas under study. The range lay between 5.3 to 5.6. The average family size was lowest (5.3) for Rajasthan and highest for Gujarat (5.6). The average family size for Andhra Pradesh, Gujarat and Rajasthan was computed from some of the village survey monographs, which could not be included in the summary data and analysed due to lack of complete data.

The proportion of families in the 4-6 member category was over 42% in all four states. The range lay between 42-45%. The highest proportion was in Gujarat with 45.06% and the lowest in Mysore with 41.69%. In Mysore and Gujarat, 7-9 member families were more by 0.26% and 1.54% respectively as compared to the 2-3 member family. This was not the situation in Rajasthan and Andhra Pradesh, where 2-3 member families were more by 1.50% and 1.80% respectively. Single member families were highest in Mysore (7.1%) and lowest in Andhra Pradesh, (4.1%). In case of the 10 + member category, the range lay between 6.8 to 8.7%. The percentage of "joint" families was highest in Rajasthan which, however, had the lowest percentage of 10 + member families, when compared to the other regions studied.

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* The word 'state' will be used in the discussion Though the villages under study may not be truly representative of the whole state they nevertheless represent the state to a limited extent.

TABLE 2

Summary data of families by size of family, in rural areas of selected states, 1961

State	No. of villages	Distribution of families by size					Total no. of families	Total population	Average size of family
		1	2-3	4-6	7-9	10 +			
Andhra Pradesh	13	55	299	589	279	116	1338	7343	5.48*
Mysore	22	470	1406	2766	1423	570	6635	35903	5.41
Gujarat	7	51	213	470	229	80	1043	5582	5.59†
Rajasthan	17	93	349	687	332	106	1567	8251	5.30‡

State	No of villages	Percentage distribution of families by size					Total
		1	2-3	4-6	7-9	10 +	
Andhra Pradesh	13	4.11	22.35	44.02	20.85	8.67	100.00
Mysore	22	7.08	21.19	41.69	21.45	8.59	100.00
Gujarat	7	4.89	20.42	45.06	21.96	7.67	100.00
Rajasthan	17	5.93	22.27	43.84	21.19	6.77	100.00

* V S M No 16 is not taken account of, when total number of families become 1,438 and total population as 7,874

† V S M No 1, 4, 12 and 13 are not taken account of, when total number of families become 1,479 and total population as 8,263

‡ V S M No 20 is not taken account of, when total number of families become 1,624 and total population as 8,614

The average size of the 10 + family did not vary considerably—it was 11.4 for Gujarat, 12.3 for Mysore and 12.4 for Andhra Pradesh. It could not be computed for Rajasthan due to lack of data. The largest percentage of population (39.6%) for Andhra Pradesh, 38.4% for Mysore and 41.5% for Gujarat, lived in medium sized families of 4-6 members. The 7-9 member families came next in hierarchy followed by the 10 + member families, the 2-3 member families, and lastly, single member families. This situation held good for all the regions studied except Rajasthan for which this data was not available.

In order to estimate the true proportions of nuclear families, Joginder Kumar's[6] methodology was applied as families might be

TABLE 3

Summary data on distribution of population by size of family, in rural areas of selected states, 1961

State	No. of villages	Distribution of population by size of family					Total population	Average size of families of size 10 +
		10 +	7-9	4-6	2-3	1		
Andhra Pradesh	13	55	772	2910	2164	1442	7343	12.43
Mysore	22	470	3631	13782	11019	7001	35903	12.28
Gujarat	7	51	537	2316	1766	912	5582	11.40
Rajasthan	17	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

State	No of villages	Percentage distribution of population by size of famly					Total
		1	2-3	4-6	7-9	10 +	
Andhra Pradesh	13	0.75	10.51	39.63	29.47	19.64	100.00
Mysore	22	1.31	10.11	38.39	30.69	19.50	100.00
Gujarat	7	0.91	9.62	41.49	31.64	16.34	100.00
Rajasthan	17	N.A.	N.A.	N.A.	N.A.	N.A.	—

N A Not Available

nuclear functionally but not so residentially in the true sense, and would be included in the 'others' category as per the census classification.

According to the census classification, the "others" category includes families consisting of unmarried children and one of the parents i.e. a "one parent nuclear family", as also the uni-member family. One parent families could emerge as a result of divorces and desertions but the major cause is expected to be mortality. Thus, by subtracting the proportion of 'uni-member families' from the 'others' category, the proportion of 'one parent nuclear families' and 'miscellaneous' kinds of families; both of which are grouped under Column 4 of the residual 'others' category are obtained as given in Table 4. The relative proportions of the above types of families is difficult to determine due to lack of substantial data. Available data does not give the proportion of the 'one parent nuclear families' included in the residual 'others' category. Thus, what we estimate is the effective proportion of nuclear families based on certain assumptions.

TABLE 4

Estimate of the true proportion of nuclear families in rural areas of selected States, 1961

State	Proportion of total families as				Estimated proportions of nuclear families assuming "one parent nuclear family" as 50%, 75% and 100% of residual "others" category		
	Nuclear (1)	Others (2)	Unimember (3)	Residual "others" (4)	50% (5)	75% (6)	100% (7)
Andhra Pradesh	45.29	24.29	4.11	20.18	55.38	60.43	65.47
Mysore	52.79	10.50	7.08	3.42	54.50	55.36	56.21
Gujarat	59.92	1.82	4.89				
Rajasthan	53.28	1.98	5.93				

* Estimated proportions of Nuclear Families under the assumptions that "one parent nuclear family" are 50%, 75% and 100% of the "residual others" category

6 *Op cit*, Kumar, Joginder

Table 4 presents three assumptions in the estimation of the true proportion of nuclear families. The assumptions are that 50, 75 and 100 percent of the residual "others" category i.e. the proportion of 'others' minus the proportion of 'uni-member families' are 'one parent nuclear families.' The rest of the families are lumped in the 'miscellaneous' category, which includes families which cannot be classified either as intermediate or joint families and include groups of unrelated members.

The estimated proportion of nuclear families in Columns 5 and 6 of Table 4, shoot up considerably when compared with Column 1 for Andhra Pradesh and Mysore states. This could not be computed for Gujarat and Rajasthan due to errors in the data. In these states though, the proportion of simple families is quite high probably due to the enumeration bias, resulting in the inclusion of "uni-member" families in this group.

We assume Column 6 to represent the true proportion of nuclear families for the states of Andhra Pradesh and Mysore. In the case of Rajasthan and Gujarat, the nuclear families in Column 1 are taken to represent the true state of affairs. The picture changes to a certain extent in that Gujarat still has the highest number of nuclear families, Andhra Pradesh which had the lowest proportion of nuclear families before the correction, now has 60% of its families as nuclear and comes to the same level as Gujarat. Mysore comes next with

55% nuclear families with Rajasthan state occupying the lowest position.

Regional variation in family structure distribution

A broad cultural diversity exists in India, with regional, linguistic and caste differences in the population. However, there also exists a certain unity in this diversity—the joint family system is deeply rooted in almost all the regions of India. Besides, the basic philosophy, the way of life and customs still remain the same. In short, the broad cultural pattern is common to almost all the Indian population, however differently each community may interpret it in its details. From this point of view the villages selected tend to be representative for they have all the major castes and many of the minor ones among its population, but also have full religious representation.

The type of family is influenced by the type of economy, demand for family labour, beliefs and practices, social customs, age at marriage, literacy, income, physical mobility and property. All the above variables vary in their detail in the different states of India.

Evidence suggests that there exist differences of family structure in the regions under study. It was established earlier that the extent of nuclear families is quite high in all the states. Some of the reasons might be common to all the regions under study.

Nuclear families arise by two processes in India. Firstly, by the dissolution of existing joint families and secondly, by their formation immediately after marriage. Both these processes are studied by indirect means in the analysis of family data. The data for Rajasthan and Gujarat has been elaborately discussed in the paper.

Summary and Conclusion

An attempt has been made to study the family structure in four states of India, viz., Andhra Pradesh, Mysore, Gujarat and Rajasthan. The family structure differs in all the four states in the proportional distribution of the type of family. An important finding is that the proportion of simple families is more than 45%, which is quite high.

Various socio-economic characteristics have been used in the analysis of family data for Rajasthan and Gujarat states. The data for Andhra Pradesh and Mysore could not be analysed due to limitations of space. On the basis of the socio-economic characteristics discussed for each state, it seems that Gujarat is more developed as compared to Rajasthan. In most villages of Rajasthan, the basis of economy is agricultural, which is not so for Gujarat, where diversified types of economies are found, such as pastoral and fishing. Traditional village industries also exist in the villages of Rajasthan and Gujarat. The proportion of workers employed in the non-agricultural sector is much higher in Gujarat than in Rajasthan. More occupational mobility has been observed in the villages of Gujarat. The percentage of literacy and average income per month as also that of age at marriage for boys and girls is higher in the villages of Gujarat than in Rajasthan. Urban impact is reflected in the way of life in Gujarat's villages whereas urban influence is relatively much lower in Rajasthan, whose villages depict more of traditional culture and customs. All the above socio-economic characteristics are important in determining the family structure of a region. Thus, the hypothesis—with the improvement of socio-economic characteristics the family tends to become nuclear—holds good. This is substantiated by the fact that the proportion of simple families is highest in Gujarat state whereas Rajasthan has the lowest proportion of nuclear families among the four states studied.

Change is inevitable to man in all spheres of life. Mankind has developed through thousands of years from the stone age to the modern era. The changes in the socio-economic conditions of man are also reflected in the institution of the family. Thus, family structure will tend to change further with improvements in socio-economic conditions in all these villages. What would be the direction and magnitude of change is difficult to determine, but from the basis of change envisaged in the family structure of developed countries, it appears that the proportion of simple families will tend to rise further. The changing patterns of the family in the rural areas of India must take account of social forces which have created an imperative need in our generation for the family to remodel its component structure and reassess its characteristic function.

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PATTERN OF INCOME DISTRIBUTION AND FERTILITY LEVELS WITH SPECIAL REFERENCE TO INDIA

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Introduction

The wide gap between the affluent and the poor in developing countries has become a major concern of development economists in recent years. These development economists are trying to shift the emphasis from merely increasing the per capita income to creating a favourable pattern of income distribution towards the poor. Increased income is not a sufficient condition for rapid economic growth and decline in fertility, though perhaps it may result in a reduction in inequalities. Researchers have also brought out that fertility decline is more sensitive to change in income distribution than are changes in per capita income.[1]

It is generally believed that the pattern of income distribution is more unequal in developing as compared to developed countries. As a matter of fact, in some of the countries in the developing region, inequalities in income distribution have been widening and there has been an absolute decline in the standard of living of the lower income groups. What is more alarming in many of the less developed countries is not only the uneven distribution of income, but also the extent of poverty which, in absolute terms, is defined as the proportion of people living below the minimum standard of living. At the beginning of the first development decade, the average share of the poorest 60 per cent of the people in over 40 developing countries, was only 25 per cent.[2] For many countries in the developing region, the 1960's, the so named "decade of development" by the United Nations, ended as a "decade of disappointment".

It is very difficult to assess whether or not there is equal distribution of income among the people of a country. However, we can treat the distribution of income in a country as even, if the entire population is above the poverty line and all are provided with the basic necessities of life. It is commonly argued that in the early stage of economic development, economic growth has a tendency to result in increased inequalities. But it need not always be so, as pointed out by Ahluwalia[3] because the Government may take some redistributive measures for reduction in inequalities in such cases.

In some cases, inequalities in income boost saving, capital formation, investment and entreprenurial activity and hence economic development. But in Asia, Oshima[4] observed a high rate of saving and more equal distribution of income.[5] Cline[5] made similar observations in Latin American countries. To quote Dr. V. K. R. V. Rao[6], in developing countries "the upper classes who have surplus do not use it for productive investment, nor are they interested in entrepreneurial activity but they go in for more consumption, either of luxury type . . . income accompanies status rather than the function . . . the normal pattern of income distribution encourages neither saving nor enterprise and does not promote economic growth". So, inequality retards economic development. The concentration at the peak of the income pyramid leads to investment in unproductive channels such as gold, jewellery, luxurious real estates, etc. This large saving with a peak income pyramid will not result in high saving. Considering these facts from the economic point of view, it is desirable to have equal distribution of income. It has also been observed that equal distribution of income could lead to a decline in fertility.

Objective

The purpose of this study was to test the following hypotheses: that an egalitarian system of income distribution helps bring about a decline in fertility and that inequalities in income distribution obstruct a decline in fertility.

While the birth rate has been taken as an index of fertility in order to measure the pattern of income distribution, the common parameters such as concentration ratio, standard deviation of logarithm, consumer expenditure, per capita distribution of income etc., could be used. This paper is chiefly confined to an analysis of size and distribution of income, the other measures being briefly touched upon.

Any decline in fertility may be partially affected by family planning. But, as resolved by the Bucharest Conference, the success cannot be spectacular unless it forms a part of the total developmental programme, which would ultimately require the equitable distribution of income in a country. Although the family planning programme gives equal opportunity to both the rich as well as the poor, to have small families, it is the rich who have favourably utilized the services and there is a need for increased family planning practice by the poorer classes. To facilitate this, there is a great need to better the living conditions of the poor, so that they will be motivated to accept the small family norm resulting in declining fertility.

Process of increased standard of living and reduced fertility

An abrupt rise in income and wealth and in the standard of living of the masses might push up the fertility a bit, but this will be just a short-term phenomenon. In the long run, fertility will start declining because, firstly, a raise in the standard of living of the people might tend to create a favourable climate for the adoption of small families; secondly, ultimate economic development has direct effects which are more pronounced than indirect effects; thirdly, rising incomes, through modernisation, raise aspirations and tend to lower fertility in the long run, and finally, as the standard goes up individual couples become more conscious of the economic cost of an extra child in the family and thereby begin to limit their family size.

As equality in income increases the income and standard of living of the masses will improve in terms of education, sanitation, nutrition and finally reflect in the survival of children. This will lead to higher aspirations for children, i.e., declining productive values of children, the desire for smaller families, increasing family planning practice, declining fertility, declining dependency and again to a higher standard of living. This is a cyclic process leading to modernization and followed by the process of sustained desire for small families and an overall decline in fertility.

Theoretical frame-work of income inequality and fertility

Reduction in fertility is possible even with a low per capita income provided that the distribution of income is even. If we consider economic development as a process whereby real per capita income increases accompanied by reduction in inequalities in income and wealth and the satisfaction of the preferences of the masses as a whole, there is a possibility of fertility reduction even with a slow economic growth rate. Therefore, a better index of economic development would be one which takes into consideration the pattern of income distribution in addition to mere concentration at one point like per capita income (average). For envisaging a substantial decline in fertility, therefore, there is need for better socio-economic development. The more compact the distribution of income, i.e., the more even its distribution the greater the economic development, followed by a decline in the fertility. According to Ahluwalia[3], the growth of population is positively related to inequality as measured by the income share of the lowest 40 per cent of the population.

Level of income and fertility in some selected countries

Many studies have shown that income and fertility are negatively correlated. This is not tantamount to saying that as the per capita income of a country increases the birth rate decreases, for one can cite a few countries in the developing region which have high per capita incomes and high birth rates. The classical example is Kuwait whose GNP per capita annual is around $4760, occupying the third position in the world and yet its birth rate is around 45-50 per 1,000 population. Even though the GNP per capita is one of the highest in the world, the country is not considered to be developed in the real sense as the distribution of income is markedly uneven.

The "threshold" hypothesis suggests that a certain minimum level of living is essential to give the people a sense of responsibility as well as promise of a brighter future, a prerequisite for motivation for family planning. Kirk[7] observed that there are certain critical levels of industrialisation, urbanisation, education, and improved conditions of health and living, which bring about the transition from high to low fertility. In order to gear this transition, some conscious policy to improve the economic level of lower income groups, and to distribute the additional per cent of GNP among those whose standard of living is below the poverty line is desirable.

A recent study[1] of 64 developed and developing countries has brought out that the fertility rate is negatively correlated with per capita income, life expectancy at birth, effective literacy and income distribution. A perusal of Table 1 reveals that in most of the countries where high inequalities of income prevail, birth rates are generally high.

When countries with high income inequalities were compared with those having low income inequalities, by one set of economic levels, the former were observed to have high levels of fertility. Even highly developed nations with high inequalities had higher fertility levels when compared to those with the same level of economic development. This shows that equal distribution of income will perhaps lead to an overall decline in fertility. In other words, the inequality in income distribution has worked as an obstacle in the way of fertility decline in the case of countries with higher per capita income, while on the other hand, equal distribution of income has led to a decline in fertility in countries with low per capita incomes. Thus, irrespective of the per capita income, the equality in income distribution has caused a decline in fertility.

Many studies support the statement that economic development

TABLE 1

Cross-classification of countries by income level, equality and fertility

		Income level of population			
Country (year) (1)	Per capita GNP US $ (2)	Lowest 40% (3)	Middle 40% (4)	Top 20% (5)	Crude birth rate (6)
HIGH INEQUALITY					
Income share of lowest 40% population less than 12%					
Kenya (1969)	136	10.0	22.0	68.0	47.8
Sierra Leone (1968)	159	9.6	22.4	68.0	44.8
Iraq (1956)	200	6.8	25.2	68.0	48.0
Philippines (1971)	239	11.6	34.6	53.8	44.7
Senegal (1960)	245	10.0	26.0	64.0	43.3
Ivory Coast (1970)	247	10.8	32.1	57.1	46.0
Tunisia (1970)	277	11.4	33.6	55.0	46.3
Honduras (1968)	265	6.5	28.5	65.0	43.0
El Salvador (1969)	295	11.2	36.4	52.4	41.9
Turkey (1968)	282	9.3	29.9	60.8	43.0
Malaysia (1970)	330	11.6	32.4	56.0	35.0
Brazil (1970)	390	10.0	28.4	61.5	37.8
Peru (1971)	480	6.5	33.5	60.0	41.8
Gabon (1968)	497	8 8	23.7	67.5	32.5
Jamaica (1958)	510	8.2	30.3	61.5	39.0
Costa Rica (1971)	521	11.5	30.0	58.5	31.2
Mexico (1969)	645	10.5	25.5	64.0	42.0
South Africa (1965)	669	6.2	35.8	58.0	44.0
Panama (1969)	692	9.4	31.2	59.4	38.0
Venezuela (1970)	1004	7.9	27.1	65.0	40.9
Finland (1962)	1599	11.1	39.6	49.3	18.1
France (1962)	1913	9.5	36.8	53.7	18.0
MODERATE INEQUALITY					
Income share of lowest 40% between 12% and 17%					
Burma (1958)	82	16.5	38.7	44.8	50.0
India (1964)	9	16.0	32.0	52.0	41.0
Madagascar (1960)	120	13.5	25.5	61.0	46.0
Dominican Republic (1969)	323	12.2	30.3	57.5	48.5
Iran (1968)	332	12.5	33.0	54.5	45.4

(1)	(2)	(3)	(4)	(5)	(6)
Guyana (1956)	550	14.0	40.3	45.7	43.2
Lebanon (1960)	508	13.0	26.0	61.0	31.8
Uruguay (1968)	618	16.5	35.5	48.0	21.7
Chile (1968)	744	13.0	30.2	56.8	31.0
Argentina (1970)	1079	16.5	36.1	47.4	20.0
Puerto Rico (1968)	1100	13.7	35.7	50.6	25.0
Netherlands (1967)	1990	13.6	37.9	48.5	18.9
Norway (1968)	2010	16.6	42.9	40.5	17.6
Germany, Fed. Rep. (1964)	2144	15.4	31.7	52.9	18.3
Denmark (1968)	2563	13.6	38.8	47.6	16.3
New Zealand (1969)	2859	15.5	42.5	42.0	21.2
Sweden (1963)	2949	14.0	42.0	44.0	14.5
LOW INEQUALITY					
Income share of lowest 40% population, 17% and above					
Chad (1958)	78	18.0	39.0	43.0	48.0
Sri Lanka (1969)	95	17.0	37.0	46.0	32.0
Niger (1960)	97	18.0	40.0	42.0	52.0
Pakistan (1964)	100	17.5	37.5	45.0	
Uganda (1970)	126	17.1	35.8	47.1	43.2
Thailand (1970)	180	17.0	37.5	45.5	42.8
Korea (1970)	235	18.0	37.0	45.0	35.6
Taiwan (1964)	241	20.4	39.5	40.1	34.6
Greece (1962)	500	21.7	29.7	49.5	19.3
Yugoslavia (1968)	529	18.5	40.0	41.5	19.0
Bulgaria (1962)	530	26.8	40.0	33.2	16.9
Spain (1965)	750	17.6	36.7	45.7	21.3
Poland (1964)	850	23.4	40.6	36.0	20.0
Japan (1963)	950	20.7	39.3	40.0	17.2
United Kingdom (1968)	2015	18.8	42.2	39.0	16.9
Hungary (1969)	1140	24.0	42.5	33.5	15.0
Czechoslovakia (1964)	1150	27.6	41.4	31.0	16.3
Australia (1968)	2509	20.0	41.2	38.8	17.2
Canada (1965)	2920	20.0	39.8	40.2	21.4
United States (1970)	4850	19.7	41.5	38.8	19.9

Source · Jain, S and Tiemann, A, 1973, Size Distribution of Income : A Compilation of Data, Development Research Centre Discussion Paper No. 4, World Bank, Washington, D.C.

Note : Crude Birth Rates for some countries are approximate. (D.Y. Book). Low Income upto US$300, $750, High Income Above USA$750.

among the lower income groups would have a greater effect on birth rate than an increase in the per capita income of the country. In an interesting study carried out by Rich[8], average income levels of 60% of the population correlated much more closely with fertility levels than the average income of the entire population. In a comparison of 40 less developed countries an increase of $10 in the income of the lower 60% was associated with a 0.7 per thousand decline in the crude birth rate whereas a $10 increase in average income was associated with only a 0.3 per thousand decline. The World Bank Staff Report[1] claims that each additional percentage point of total income received by the poorest 40% of the population is associated with a 2.9 point reduction in the general fertility rate. It is worth mentioning that East European countries have lower birth rates than countries with similar levels of economic development. This is attributed to a more equitable distribution of income in East European countries. In another study[9] it was brought out that in the United States, as a result of changes in the income levels of all strata during 1960-71, towards a more equitable distribution, the reduction of fertility in the lower stratum was significant as compared to that among other strata.

Experiences of countries where fertility has declined

More recently a few countries in East Asia notably South Korea, Singapore, Taiwan and Hongkong and some in Latin America like Uruguay, attracted the attention of world demographers on account of the rapidity with which their birth rates declined. A close observation of data for these countries revealed two interesting features: (1) a rapid decline in death rate including infant mortality rate and (2) the significant policies aimed at equitable distribution of income such as land reforms, free and compulsory education and successful employment strategies. According to Ashima[4], income distribution is more unequal in South East Asian countries as compared to East Asian countries where the practice of family planning is also high.

South Korea:

The decline in crude birth rate in South Korea, is of recent phenomenon. S. Korea's[10] per capita income is low, only US $210 in 1969. During the 1960s, the birth rate declined from 42 to 30/1,000 population. During 1960-68 the total fertility declined by 26% in rural areas. The overall decline being 30%. It is important to note that S. Korea has a more equitable distribution of income than most other countries in Asia. Its family planning programme became effective in 1964, even though it was officially started in 1962. There is evidence that fertility had begun to decline even earlier possibly due to delayed marriage, greater use of birth control methods, and low income inequalities. The peculiarity in S. Korea is that contraceptive practice seems to be higher in rural areas than urban areas. One third of the decline in S. Korea's fertility may be attributed to family planning.

Taiwan:

Taiwan is a developing country with low income inequalities. Its per capita income was US $241 in 1964 rising to US $300 in 1969. This increase is moderate as compared to that of some other countries, but the decline in birth rate is high. Taiwan's birth rate was 40/1,000 in the pre-war and early war periods, came down to 34.5/1,000 in 1964 and to 27/1,000 in 1970. According to Taiwan's Provincial Department of Health, the birth rate declined to 25.6/1,000 in 1971. In Taiwan, the family planning programme actually began in 1964, but the fertility decline was noticed much earlier. During this period, there was equal distribution of income accompanied with high living standards of the rural population. Family planning though not the solitary factor, no doubt facilitated the rapid decline of fertility.

West Malaya:

This is one of the countries which has equal distribution of income, with moderate economic development. The per capita income which in 1961, was US $363 declined to US $340 in 1969. Even for the period 1956-70 the crude birth rate declined rapidly, i.e. from 46.7 to 32.1/1,000 population, showing that even with static economic development there is a possibility of reduction in fertility. In West Malaya, family planning was started in 1966-67, and the birth rate has been declining continuously since then.

Japan:

Japan is one of the highly developed countries. Its per capita income in 1961 was US $383, and in 1969 it was US $1430. Even in 1963, the income distribution was very even. As a consequence of land reform, 75% of the farm families in 1966 owned their own land. The percentage of tenants decline from 29% in 1940 to 3% in 1960. Japan's birth rate reduced to half between 1920 and 1955, the major decline occurring during the post-war period—from 29 in 1940 to 19/1,000 in 1955. A tremendous fertility decline was observed during 1947-55 associated with equal distribution of income and also because of the legalisation of abortion.

U.S.A.:

The United States is another highly developed country with low income inequalities. In the U.S.A., the crude birth rate of 40/1,000 in 1880 was reduced by half in the following sixty-year period. Recently the birth rate has reached a minimum level. Kuznets[19] believes that during the early twentieth century, income was distributed somewhat more equally in the rural than in the urban sectors. There is evidence to indicate an overall decline in income inequality.

China:

Fertility has declined from 43/1,000 population in the late 1940's to 32 in 1970. The change is associated with dramatic improvements in living conditions for the bulk of the rural population.[11] It appears that the current regine has made considerable progress in achieving an equal income distribution. There is evidence for the widespread practice of family planning and a substantial decline in fertility both in rural and urban areas, partially attributable to the "barefoot" doctors."

Costa Rica:

Though it comes in the high income inequality group, Costa Rica's inequality is moderate. Of late, Costa Rica has a per capita income equal to that of Mexico. However, lower concentration of land holdings, higher literacy rates and better health facilities suggest more equal distribution of income as compared to Mexico.[12] Consequently, in Costa Rica, the fertility has declined from 514 in 1954 to 31.2/1,000 in 1971.

Sri Lanka:

Gunnar Myrdal believes that Sri Lanka may be the only country in South Asia in which income distribution has become more equal in recent years. Sri Lanka has the highest literacy in South Asia. It also has a nice and effective programme of providing two servings of rice daily to the entire population. The levels of living are more equally distributed than income. As a result Sri Lanka has recently experienced a rapid decline in fertility from 40 in 1960 to 32/1,000 in 1969.

Unequal distribution and absence of fertility decline:

In countries like Mexico, Brazil, Thailand and the Philippines where the per capita income is high and is also increasing, fertility has not declined significantly perhaps due to the uneven distribution of income and high concentration of economic power.

TABLE 2

Comparison of size distribution of family income : selected countries by income share of decile group and fertility level

	Period I					Period II				
			Income level of population					Income level of population		
Country (year)	Per capita GNP in US $ in 1961	CBR 1961	Lowest 40%	Middle 40%	Top 20%	GNP in US $ (year)	CBR	Lowest 40%	Middle 40%	Top 20%
Sri Lanka (1963)	123	40	13.7	34.0	52.3	95 (1969)	32	17.0	37.0	46.0
Phillippines (1965)	188	45	11.7	33.3	55.0	239 (1971)	44	11.6	34.6	53.8
Thailand (1962)	101	43	12.9	31.5	57.7	180 (1970)	43	17.0	37.5	45.5
Mexico (1963)	297	44	10.5	31.5	58.0	645 (1969)	43	10.5	25.5	64.0
Brazil (1960)	268	41	8.6	21.9	69.6	390 (1970)	38	10.0	28.4	61.5

Source : Cline 1971, Table 1, p. 17, Oshima 1970, Table 1, p 13, per capita income estimated 1961, Rosentian Rodan, 1961, Tables 1-A and 2-C, pp. 118 and 126 and Table 1.

Table 2 gives information at two points of time on income distribution, per capita income and fertility.

Mexico:

In Mexico the income distribution is very uneven. The per capita income has increased from the US $297 in 1961 to US $645 in 1969. The urban population was half the total population. Over the past 30 years, Mexican agriculture has developed along dualistic lines but the spectacular gains in output have been concentrated among a fairly small group of farmers.[13] The rural average family income is half the urban average family income but the income of the rural top 5% is as high as that of the urban top 5%, indicating that income is more unequally distributed in rural areas. This is why Mexico's birth rate has not declined, i.e. 44 per thousand population in 1961 and 42 in 1969. From Table 2, it is clear that during this period though per capita income increased, the distribution of income remained almost the same.

Brazil:

The per capita income of Brazil has increased from US $268 in 1961 to US $390 in 1970. There was a modest improvement in the pattern of distribution towards equality and there was a marginal reduction in fertility during 1961-70. In Brazil, the per capita income of the lower class remained static or even decreased and that of the upper class is increasing by more than 2.4 times per generation.[14] Fishlow[15] found that unequal access to education is a major cause of income inequality. The crude birth rate had not declined prior to the 1960s and the decline during 1960-70 was very low i.e. 41 to 38/1,000 population. Dalay[16] argues that even this marginal decline in the overall birth rate in both Mexico and Brazil provides little or no basis for helping that fertility has been reduced among either the rural or the urban poor. During this period, the middle class became relatively better off.

Philippines:

In the Philippines income distribution is uneven. The per capita income has increased from US $188 in 1961 to US $239 in 1971. There is neither a change in the income distribution, nor a reduction in fertility, and the land ownership pattern is skewed.

Thailand:

The per capita income here increased from US $101 in 1961 to US $180 in 1970. There was an overall improvement in the pattern of income distribution, though no significant decline in fertility was registered. This may be due to high income inequality in 1950. Income distribution was more unequal in rural than in urban areas.

Nigeria:

Though Nigeria comes in the low income inequality group, its income distribution is moderate. The per capita income is low. The rural-urban differential in income has widened since 1965; in 1965 the average farm earnings were only a third of the urban unskilled wage rate.[18] This explains its high fertility.

Pattern of income distribution and fertility levels in India:

Kuznet[19] and Dandekar viewed the pattern of income distribution in India is very uneven. The ultimate objectives of the economic policy adopted in India are those of increasing income and reducing income inequalities. Symptoms of declining fertility have started emerging and the relationship between income level and fertility can be better understood through the N.S.S. data as given in Table 3.

TABLE 3

Annual birth rate per 100 persons by per capita monthly household expenditure in rural areas of India from three interpretative samples

Sample	Per capita monthly household expenditure (Rupees)								Not recorded	All
	Below 8	8-10	11-15	16-20	21-25	26-30	31-50	51-		
1	43	45	41	34	31	27	24	24	27	39
2	44	42	36	33	31	25	25	17	13	36
3	37	38	34	31	29	25	27	20	34	33
Combined	41	42	37	33	31	26	25	20	21	36

Source National Sample Survey, 17th Round, No 184

Table 3 reveals a high birth rate among those who have lower per capita monthly household expenditure. It may be true that income distribution is moderately skewed in India as a whole, but this differential pattern of income distribution exists both in rural and urban areas and also by states.

An analysis made by the N.S.S. (17th round) on consumer expenditure reveals that the average number of persons per house-hold as observed during 1960-61 was 5.12 for the rural sector and 4.64 for the urban sector. For cities like Bombay, Calcutta, Delhi and Madras the average household size was 3.87. The percentage distribution of households gives some idea of the extent of prevailing inequalities in income in both rural and urban areas. The proportion of persons who could spend less than 50 paise a day is 36.03%, 19.62% and 3.54% for the rural, urban and city sectors respectively, while those who can spend Rs. 2.50 or more per day are 1.33%, 4.93% and 15.17% for the three respective areas. There is a wide gap in the level of per capita consumer expenditure in the rural and urban sectors in India, e.g., the total consumer expenditure per person per 30 days is Rs. 27.73, Rs. 30.86 and Rs. 48.04 for rural and urban areas and cities respectively. Table 4 gives the percentage distribution of the estimated number of persons by monthly household expenditure and by states for the period 1960-61.

It can be seen that states such as Kerala, Mysore, Andhra Pradesh and Orissa whose per capita income is low or moderate, but where income distribution is even, exhibit low fertility. On the other hand, states like Punjab, Gujarat and Assam where per capita income is higher but income distribution is uneven, have high fertility. However, there are also some states with high per capita incomes and low fertility and low per capita incomes but high fertility. In general, states with high per capita incomes and a relatively even distribution of income have high rates of family planning acceptance.

It may be mentioned here that the higher the population of the middle income class in a state, the lower is its fertility. (Table 4). Agarwala[20] has rightly pointed out that reduction of an additional 1 or 2% of the GNP of the lower income group may be sufficient to bring down their fertility.

A high but negative (—0.77) correlation coefficient exists for the lower income class (Rs. 0 to 25) of rural areas, whereas for urban areas the figure is positive (+ 0.39) and significant. The Rs. 0 to 50 income class in rural areas has a negative co-efficient which is insignificant (-0.17) whereas in the urban community it is negative and significant, (-0.64). In the income class, Rs. 50-150 a negative relation was observed which was low for rural (-0.39) and high for urban about (-0.63). A positive correlation co-efficient of +0.49 was observed for the income group Rs. 150 in both rural and urban sectors.

We have worked out the correlation co-efficients between the per capita income and birth rates for the 16 states of India over different periods of time viz. 1955-56, 1960-61. 1967-68 and 1960-70. Surprisingly, the 'r' values (0.26, 0.14, 0.14 and -0.31 respectively) come out to be positive and insignificant. This may be due to the wide disparity in the income levels among the states. Nevertheless, the decreasing trend of 'r' values over a period of time reveals that the wide disparity in the distribution of income among the states has

TABLE 4

Percentage distribution of estimated number of persons by monthly household expenditure and states

State	Monthly household expenditure class (in Rupees)						CBR 1961
	Rural			Urban			
	0-50	50-150	150+	0-50	50-150	150+	
Andhra Pradesh	17.89	60.68	21.43	7.88	62.36	29.76	39.6
Assam	0.88	57.00	33.65	2.89	28.09	69.02	49.5
Bihar	15.69	57.46	26.85	8.36	49.70	41.94	42.8
Gujarat	6.66	55.90	37.44	2.80	39.31	57.89	45.3
Kerala	9.52	60.34	30.14	5.05	53.30	41.29	38.8
Madhya Pradesh	13.41	61.48	25.11	8.78	45.19	46.03	42.4
Madras	16.05	62.52	21.43	9.66	51.71	40.07	34.7
Maharashtra	10.96	63.08	25.96	4.54	38.63	56.83	40.6
Mysore	6.71	55.50	37.79	8.18	45.71	46.11	41.5
Orissa	21.59	58.87	19.54	9.13	46.38	44.29	40.6
Punjab	2.76	39.17	58.05	4.89	46.51	48.60	44.6
Rajasthan	14.27	49.37	36.36	5.17	48.00	46.83	42.3
Uttar Pradesh	9.34	58.29	32.37	8.40	62.98	28.62	41.2
West Bengal	8.31	63.87	27.82	5.94	43.11	50.95	42.9

Source : N.S.S. 17th round No 184 (Published 1974) (CBR) Report on Population Projections 1968, Office of the Registrar General, India.

narrowed down. The author is aware that a number of socio-economic factors determine fertility performance in a population and income is one among those factors. It is difficult, if not impossible, to quantify the contribution of income per se to fertility reduction by controlling the influence of other variables. Multiple regression analysis and multiple classification analysis are the plausible lines of approach but the data available does not permit us to resort to such sophisticated statistical tools.

The pattern of income distribution in India is quite uneven. The top 20% of the population has a share of about 39% in total expenditure on consumption in the rural sector and 42% in the urban sector, while the bottom 20% of the population has a share of only about 8% in the rural sector and about 7% in the urban sector[21]. One cannot deny the fact that there has been some acceleration in the economic growth rate of the country but the pace of economic development has been too slow in relation to population growth. Morever, those who are better off have become still better off but the plight of the poor has increased marginally. It is precisely this latter income group which has high fertility. The reduction in birth rate in recent years has been marginal and may be mainly attributed to the decline in fertility of the economically better off people. This fact is clearly brought out by Table 5.

TABLE 5

Practice of family planning and family income

Family Income Rs. (per month)	Current Users	Past Users	Ever Users
Below Rs. 100	9.9	3.0	12.9
Rs. 101 - 200	11.2	3.9	15.4
Rs. 201 - 500	19.7	4.3	27.0
Rs. 501 - 1000	28.6	10.1	29.7
Rs. 1000 +	39.2	11.5	50.7

Source: Operation Research Group, Baroda (O R G)

The O.R.G. Survey observes that practice of family planning increases with family income. Over 50% of the couples with incomes of Rs. 1,000 per month have ever practised family planning as against 13% in the lowest income group of Rs. 100 or less per month. It is clear that the fertility of the upper income group has started declining and the same trend is spreading to the lower income groups.

Lydall has estimated the distribution of income using N.S.S. data relating to the income of the income tax paying group for 1955-56 as given in Table 6.

TABLE 6

Estimated distribution of pre-tax income (and persons) in India
1955-56

Monthly pre-tax income per head	Percentage of total popn	Percentage of total income	Estimated percentage of persons	
			Rural	Urban
(1)	(2)	(3)	(4)	(5)
Under 10	25.0	19.5	12.0	27.8
10-19	44.0	31.5	40.8	45.3
20-29	17.0	19.4	21.5	15.2
30-39	6.0	9.7	10.1	5.3
40-49	3.0	6.3	5.0	2.4
50-74	2.7	8.0	7.6	3.1
75-99	1.0	3.7		
100-199	1.0	6.1	3.0	0.9
200+	0.3	5.8		
	100.0	100.0	100.0	100.0

Source · (1) Lydall, H F., The Inequality of Indian Incomes, *Economic Weekly* Special Number, June 1960
(2) Lydall, H F and Ahmed, A, An Exercise in Forecasting Consumer Demand and Taxation Yields in 1965-66 (mimeographed)

TABLE 7

Relative of total income possessed by the group of households

Percentage of households	Percentage of income		
	1952-53	1953-54	1956-57
(1)	(2)	(3)	(4)
Top 5	14.0	14.0	17.5
Top 10	24.0	23.0	25.0
Bottom 20	7.5	8.0	8.5

Source : Iyengar N S. and Mukherji M., Paper presented at Second Econometric Conference, June 1960.

About 86% of the population had a per capita annual income of less than Rs. 360 and about 69% less than Rs. 240. In other words, the top 10% accounted for as much as 33% of the post-tax income and the top 20% accounted for 47%. On the other hand, the bottom

50% accounted for only 25% of the total income which shows the wide disparity in income distribution.

N. S. Iyengar and M. Mukherji have presented a distribution of income by household group in Table 7.

It is clear from the Table that the middle income group became relatively worse off over the period 1952-57.

TABLE 8

Distribution of individual assessees by fractile groups for pre-tax and post-tax incomes

Proportion of assesses (p c)	Pre-Tax			Post-Tax		
	1950-51	1953-54	1958-59	1950-51	1953-54	1960-61
1	2	3	4	5	6	
Bottom 70	35.9	37.0	39.8	41.5	44.0	47.5
Middle 20	23.4	23.5	24.8	24.5	26.0	26.5
Top 10	40.7	39.5	35.4	34.0	30.0	26.0

Source Committee on Income Distribution in India, 1961, Part I

Table 8 indicates that the share of the bottom 70% has increased from 35.9 in 1950-51 to 41.5 in 1960-61, whereas the top 10% had lost its share from 40.7 in 1950-51 to 34.0 in 1960-61. It shows a slight reduction in inequalities during the period 1950-51 to 1960-61. From the above observations one may conclude that though there has been no substantial improvement in the income of the poor, the shift in distribution has been favourable to them.

Size of the household

The size of the household may sometimes be taken as an indicator of fertility. In India, data are available on the number of persons per household (Table 9).

The average household size is higher among the lower income groups for both the urban and rural populations. One can notice a steady declining trend in the value of the average household size for both urban and rural sectors with an increase in the economic level of the population. The richest 5% of the population has an average household size of 3.78 for the rural and 2.25 for the urban sector, whereas the poorest 10% has an average of 5.87 for rural and 6.09 for urban. The correlation coefficient between the economic level and the average household size works out to be significantly negative. The existing differential in family size by income group, implies that

TABLE 9

Average size of household in different sections of rural and urban population (1967-68)

Section of population (Percent)	Number of persons per household Rural	Urban
0-10	5.87	6.09
10-20	5.72	6.00
20-30	5.57	5.82
30-40	5.53	5.48
40-50	5.31	5.37
50-60	5.30	4.93
60-70	5.33	4.39
70-80	5.11	3.49
80-90	5.00	2.89
90-95	4.61	2.74
Richest 5%	3.78	2.25
All Sections	5.25	4.70

Source Dandekar, V M and Rath, N Poverty in India, Dimensions and Trends, *Economic and Political Weekly*, Vol 6, No. 1, 1971

uneven distribution of income unfavourable to masses, might not cause a decline in fertility.

Iyengar, Mukherji and others have analysed the distribution of households by size, and personal income for the period 1952-53 to 1956-57. A close examination of the Table 10 reveals that pattern of distribution of households is becoming equal.

TABLE 10

Percentage of households and income by household income class, 1952-57

Annual household income (Rs) (Class)	1952-53 % Households	1952-53 Income	1953-54 % Households	1953-54 Income	1956-57 % Households	1956-57 Income
0- 500	8.2	2.6	8.6	3.5	9.3	3.8
501-1000	31.4	16.9	31.9	18.5	38.0	23.6
1001-1500	27.6	25.2	30.7	28.0	30.0	28.9
1501-2000	13.9	17.8	15.0	21.5	13.6	19.7
2001-2500	12.2	18.5	7.2	11.7	4.1	6.9
2501+	6.7	19.0	6.6	16.8	5.0	17.1
Total	100	100	100	100	100	100

Source : N.S S., R.B. 1 Data.

Table 11 provides the total nett income of rural and urban households by income class.

TABLE 11

Percent income by income class

Income Class (Rs)	Weighted percentage of households	Weighted share in income	Cumulative weighted share in income
Under 500	15.80	3.76	3.76
500-999	36.13	18.90	22.66
1000-2999	40.42	45.90	68.56
3000-4999	5.19	13.87	82.43
5000-9999	1.86	8.74	91.17
10000-24999	0.49	4.93	96.00
25000	0.11	3.90	100.00
All income groups	100.00	100.00	100 00

† Net income does not include rental on ownership occupied house

Source All India Household Survey 1952, Occasional Paper No 13, NCAFR Table 13, p 23

It appears from the table that the lowest 16% of households had a share of 3.8% of the income, the lowest 50% shared 22% of the income and nearly 2% of the households have an income of Rs. 5,000-5,999. The share of 9% those who earn Rs. 25,000 or more per year constitute of 0.1% and their share in income is 3.9%. Nearly 52% of house holds received an income of less than Rs. 1,000 per year, while 40% had an annual income of Rs. 1000-3000. The bottom 16% received 4% of the total household income whereas the top 8% received 30% of it. Comparing this with the data of 1962, it would appear that inequalities in rural areas show a declining trend where as the concentration ratio for 1960-64 for urban areas remained static (0.49).

TABLE 12

Percentage distribution of per capita consumption during different periods

Section of population	1956-57	1957-58	1960-61	1961-62	1963-64	1964-65	1967-68
Poorest 40%	20.37	20.15	20.74	20.58	21.94	21.59	21.68
Middle 40%	39.21	38.50	38.12	40.22	40.65	40.74	40.56
Top 20%	40.42	41.36	41.13	39.20	37.41	37.87	37.76
CBR	44.5		41.7				40.5

Source : National Sample Survey, 13, 16, 17, 18, 19, and 22nd Rounds Reports

Per capita consumption is a convenient overall measure of the standard of living. The per capita private consumption which was Rs. 21.60 per month in 1950-51 (at 1960-61 prices) rose to Rs. 24.80 in 1960-61, an increase of 1.4% per annum. N.S.S. data indicate that the income share of 40% of the poorest people has increased from 20.37% in 1956-57 to 21.68% in 1967-68. There is a little improvement in the share of the middle income group. The top 20% people's share declined from 40.42 to 37.76% for the period under consideration. Because of this improvement in income, the crude birth rate may decline steadily. Here a per capita consumption experience of Rs. 240 has been defined as the poverty line.

Population below the minimum standard of living

The estimates made by Minhas[22] showed that the proportion of people below the minimum level of living which was 58% in 1957-58 declined to 39% in 1973-74 whereas the absolute number of people living below the poverty line remained almost static.

TABLE 13

Share of different quartiles of population in the national income

	Population quartile (%)	1942	1962-63	1973-74
Bottom	25	9.59	10.69	11.93
Next	25	16.59	16.88	17.31
Next	25	24.38	23.72	22.89
Top	25	49.45	48.71	47.87

Source Some Economic Aspects of Malnutrition in India by S P. Ahuja

According to Minhas[22], the per capita income has increased to Rs. 290 in 1960-61. The concentration index has fallen from 0.335 in 1957-58 to 0.311 in 1960-61 and further down to 0.300 in 1973-74. It is expected to reach 0.375 in 1980-81.

The share of the bottom 50% of the population in the total national income has increased and that of the top 25% has fallen slightly (Table 13). One may say that the inequalities in India are narrowing down over a period of time, but the changes are very marginal.

The document for the Fourth Plan prepared by NCAER[23] mentioned that the rural population below a minimum level has in fact increased from 174 million in 1966-67 to 186.5 million in 1970-71. It becomes rather difficult for us to arrive at a firm conclusion regarding the changes in income distribution as the data are drawn from various sources over different periods of time and comparison is of a questionable nature.

Conclusion

Our analysis reveals that countries like South Korea, Japan, United States, Taiwan, Sri Lanka and Uruguay, support our first hypothesis that equalities in income distribution contribute to a decline in fertility. On the other hand, experiences of countries like Brazil, Mexico, Philippines and Costa Rica support certain hypotheses that unequal distribution of income is an obstacle to decline in fertility. For India too, our hypothesis stands. Recently, income distribution is becoming even due to some redistributive measures taken by the Government of India. Consequently, we observe a declining trend in the country's fertility.

The success of any population policy aimed at reducing the fertility of the country will therefore depend mostly on economic policies directed towards improving the living conditions of backward regions and the economically poorer sections of the country. It may be difficult to achieve the desired reduction in fertility unless inequalities between the rich and the poor are narrowed down and concentration of economic power is reduced. In conclusion, it is worth quoting the statement made by Mr. McNamara, President of the World Bank, "more equitable distribution is absolutely imperative if the development process is to proceed in any meaningful manner. Policies whose effect is to favour the rich at the expense of the poor are not only manifestly unjust but in the end are economically self defeating. They push frustrations to the point of violence and turn economic advance a costly collapse of social stability".

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VASECTOMY: A CASE STUDY OF PLANNED PARENTHOOD CLINIC

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Voluntary sterilisation may well become the preferred contraceptive method among couples who desire no more children. This possibility is suggested by data from the 1965 and 1970 National Fertility Studies[1] in the United States. Given the difficulties experienced by many women with the pill and the intrauterine device, and the high failure rates of many other methods of contraception currently used, an increasing proportion of persons are turning to sterilisation. According to the 1970 National Fertility Study, sterilisation has become a very popular method of preventing conception. Almost three million wives under the age of 45, or their husbands, had elected for sterilisation for contraceptive reasons. This amounts to nearly one in every five couples able to bear children opting not to have any more issues. About half of such operations are elected by women and half by men.[2] In 1975 alone over one million vasectomies and an almost equal number of tubal ligations were performed in the United States.

In the fall of 1970, a group of interested citizens met with the idea of providing the people of Southwest Missouri with a voluntary family planning agency. In November of that year they established a Board of Directors and the Planned Parenthood Association of Southwest Missouri/Springfield was also formed. In January 1971, the office and clinic facility opened. From December 1972 the clinic has offered vasectomy as one method of birth control and in the 37 months since that time, over 450 vasectomies have been performed.

A follow-up study of the vasectomy patients was undertaken in January 1975. All vasectomised cases operated upon upto December 1974 were included in the study. A schedule containing twenty-one questions pertaining to demographic, socio-economic, and medical and social aspects of vasectomy was developed and mailed to 276 men who had undergone the vasectomy operation at least three months ago. One hundred and eighty-eight completed questionnaires were returned, showing a return rate of over 68%, which is generally considered to be an acceptable response rate. "When questionnaires are mailed to a random sample of the population, the proportion of returns is usually low, varying from about 10 to 50 percent".[3]

The purpose of the present analysis was two-fold: (1) to study the demographic, socio-economic, medical and social aspects of vasectomised cases, and (2) to obtain an insight into the Planned Parenthood Vasectomy Programme in order to improve its implementation.

Results

The majority of men who had undergone vasectomy (86%) were between the ages of 20 and 34, while 93% of their wives were in this age group (Table 1).

TABLE 1

Distribution of acceptors by age

Age Group	Number	Per cent
20-24	45	23.9
25-29	74	39.4
30-34	43	22.7
35-39	13	7.0
40-44	5	2.8
45-49	5	2.8
50-54	3	1.4

The largest number of vasectomy acceptors (43.6%) were professional, technical and managerial workers (Table 2).

TABLE 2

Distribution of acceptors by employment

Employment status	Number	Per cent
Professional, technical, managerial	82	43.6
Clerical and Sales	11	5.6
Service	24	12.7
Farming, fishing, forestry	8	4.2
Processing	8	4.2
Machine trades	13	7.1
Structural Work	13	7.1
Miscellaneous	29	15.5

In terms of income, 64.7% of the acceptors earned less than $7,500 per year; 5.6% of this total had yearly incomes of $2,500 per year (Table 3).

TABLE 3

Distribution of acceptors by income

Yearly income	Number	Per cent
Under 2,500	11	5.6
2,501— 5,000	29	15.5
5,001— 7,500	82	43.6
7,501—10,000	53	28.2
10,001—15,000	13	7.1

As regards their educational status a high proportion of the men (57.8%) had attained between 7 to 12 years of schooling.

About 31% of the vasectomised men had been married for four years or less at the time of the operation; 43.6% had been married for 5 to 9 years, 14.1% had been married for 10-14 years and 11.3% for over 15 years.

The majority of the vasectomy acceptors (54.7%) had two or fewer children. Of this total, 1.4% had no children and 9.7% had only one child, and 43.6% had two children. Of the rest 22.7%, 15.5% and 7.1% had respectively three, four and five or more children.

"Dislike of contraception" and "financial consideration" were the two most important reasons given by the acceptors for seeking a vasectomy. A close third and fourth were "male operation less serious" and "health reasons affecting the wife," respectively (Table 4).

TABLE 4

Reasons for seeking vasectomy

Reason	Number	Per cent
Dislike of contraception	114	60.6
Male operation less serious	82	43.6
Financial considerations	87	46.4
Personal health	3	1.4
Wife's health	71	38.0
Failure of contraception	37	19.0
Blood incapability	13	7.1
Other	18	9.7

More men (43.6%) had heard about vasectomy from some one who had had the operation than from any other source. Newspaper and magazines were the next most frequent source of information (Table 5).

TABLE 5

Source of information

Source	Number	Per cent
Newspaper or magazine article	42	22.5
Broadcast or television	3	1.4
Doctor	5	2.8
Nurse or midwife	—	—
Some one who had had the operation	82	43.6
Friend not had the operation	27	14.1
Welfare or other clinic	16	8.5
Other	13	7.1

In 69% of the cases, the interval between the time when the vasectomised persons first thought about vasectomy and actually underwent the operation was less than one year.

As many as 64.8% of the vasectomised men said that they had some fear of the operation before having it. However, of the total, 59.2% had average fear. Approximately 44% of the vasectomised patients said they had immediate, undesirable side effects. Of these, about 40% complained of pain and swelling, 2.8% of pain and fever, and 1.4% of a "dragging sensation".

Most of the men who underwent the operation (66.2%) had taken one day or less off from their work. Of the total, 46.6% did not take any leave and 19.7% took one day off. Over 98% said their general health was as good or better after the operation and that they had no regrets about it.

In terms of sex life, over 66% reported an "improved" sex life; the rest reported "no change". Over 60% reported a happier married life, and over 36% said it was unchanged. Over 97% said they would recommend the vasectomy operation to others.

Approximately 99% of the acceptors stated that Planned Parenthood had given them sufficient counselling regarding vasectomy. Among the comments were "preoperative counselling session was informative and accurate", "vasectomy illustrations were very beneficial," "vasectomy explained well," and "do's and don'ts explained".

Conclusions

Vasectomy helps to improve the life chances of the great majority of men who choose it, for (a) unwanted pregnancy is eliminated, (b) financial problems are reduced, (c) potential health problems of the wife are lessened, (d) other methods of contraception are avoided, (e) husband-wife relationships improve, and (f) family life is more pleasant.

Planned Parenthood must continue to give competent counselling service to men considering vasectomy as (a) Most men fear vasectomy and many experience unpleasant side effects. (b) A satisfied patient is the best recruitment source for new patients.

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A DEMOGRAPHIC STUDY OF TUBECTOMY ACCEPTORS OF RATNAGIRI DISTRICT

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In 1956, sterilisation was officially introduced in the Indian family planning programme. Since then, impetus has been given to large scale sterilisation programmes because sterilisation invariably remains the most effective and dependable method to control fertility and check the rapid population growth of the country.

The present study analyses the demographic characteristics of 815 tubectomy cases operated during 1974-75, in Ratnagiri District where the FPAI carries out a regular training programme for field, paramedical and voluntary workers for updating and strengthening skills in communication and programme implementation. These training programmes are followed by a service programme, mainly tubectomy, so that the trained people use their newly acquired skills to motivate eligible couples to utilise the sterilisation facilities offered by FPAI from time to time.

Ratnagiri has been considered as one of the undeveloped[1]* districts of Maharashtra State. Its sterilisation performance since 1958 to the end of March 1975 was 29 per 1000 piplation as against 51.9 per 1000 population for Maharashtra.[2] This rate places Ratnagiri last in order of rank, among the 26 districts of Maharashtra.

Results and discussion

The following paragraphs give the demographic characteristics of the tubectomy acceptors and the demographic effectiveness of the campaigns.

Age structure

The largest number of tubectomies were recorded in the age group 30-34 years and about 62.2% of the women were in the 30-39 age group (Table 1).

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* Some of its features from the 1971 census are

(a) Ratnagiri's urban population is 8 4% i e the lowest among all the 26 districts of Maharashtra;

(b) Its population variation from 1901 to 1971 was the lowest (+43 51) as compared to other districts of Maharashtra This could be due to the few employment opportunities

(c) The number of persons per occupied census house is 6 3 in Ratnagiri while Maharashtra has 5 9 persons per occupied census house.

TABLE 1

Age at time of operation

Age at sterilisation	Tubectomy acceptors
20 - 24	18 (2.2)
25 - 29	166 (20.4)
30 - 34	341 (41.8)
35 - 39	254 (31.2)
40 - 44	33 (4.0)
Age unspecified	3 (0.4)
All groups	815(100.0)

Mean age (years)		Median age (years)		Model age (years)	
Wives	Husbands	Wives	Husbands	Wives	Husbands
32.73	38.12	33.25	38.67	33.34	38.91

• Figures in parentheses denote percentages

The average age of the women at the time of tubectomy was 32.73 years, while their husbands were 38.12 years of age, thereby indicating that the husbands were on an average about 5 years older than their wives. The coefficient of correlation between the ages of the wives and husbands worked out to be +0.8074, indicating a high degree of positive correlation between their ages.

Educational status

About 59% of the tubectomy acceptors and 41% of their husbands were illiterate.

The percentage distribution of the tubectomy acceptors was less than that of their husbands at every level of education (Table 2).

Income

The average monthly family income of the tubectomy acceptors was Rs. 200.62. Only 9.9% of the women had a family income of Rs. 300 and above per month, that of the majority (75.8%) being Rs. 100-300. About 12.9% of their families had incomes below Rs. 100 a month while the remaining 1.3% did not give this information.

TABLE 2

Educational status of tubectomy acceptors and their husbands

Educational level	Tubectomy acceptors	Husbands of acceptors
Illiterate	478 (58.7)	331 (40.6)
Literate without schooling	19 (2.3)	11 (1.3)
Primary	143 (17.6)	151 (18.5)
Secondary	121 (14.8)	148 (18.2)
High School	37 (4.5)	87 (10.7)
Matriculate	16 (2.0)	80 (9.8)
Under-graduate	1 (0.1)	2 (0.3)
Graduate	—	5 (0.6)
Total	815(100.0)	815(100.0)

* Figures in parentheses denote percentages

In general, the monthly income of their families ranged between Rs. 50 and Rs. 850.

Occupation

Most of the women (96.6%) were housewives and only 3.3% were engaged in office work (1.1%) and agricultural operations (2.2%).

The occupational structure of their husbands indicated that over half of the men (58.4%) were engaged in agriculture, about 33% were classified under service and about 8% under business. This information could not be gathered from 0 1% of the women and 0.7% of the men. Thus, while most of the men were employed the majority of the women were engaged in unremunerative household activities.

Religion

As many as 93.5% of the tubectomy acceptors were Hindu, 4.4% were Muslims, and Christians and Parsis together constituted 0.6% of the total number. About 1.5% of the acceptors did not specify their religious faith.

As compared to the 1971 census[3] the percentage of sterilised Hindu women was higher and that of Muslim and Christian women lower (the proportion of Hindu, Muslim and Christian women of Ratnagiri District as per the 1971 census was 86.98%, 6.47% and 0.81% respectively). Both the average age (32.7 years) of the sterilised Hindu women and the average number of living children they had (4.27) was found to be somewhat less than that of Muslim acceptors (33.7 years and 4.72 living children) at the time of operation. The average age and average number of living children for Christian and Parsi acceptors were not computed as their numbers in the sample were small.

Family size

An attempt was made to examine the relationship between the number of living children on the one hand, and other variables like income and education on the other.

The average number of living children by income showed that women whose family income[4] was Rs. 300 and above had somewhat smaller families (3.85 living children). The break-up that indicated women who had monthly family incomes of less than Rs. 100, Rs. 100-200, Rs. 200-300 had on the average, 4 41, 4 29 and 4.38 living children respectively.

TABLE 3

Average number of living children by education of tubectomy acceptors and their husbands

Education	Average number of living children	
	By wife's education	By husband's education
Illiterate	4.49	4.54
Literate without schooling	4.68	4.91
Primary	4.28	4.39
Secondary	3.86	4.15
High School	3.57	3.86
Matriculate & above	3.57	3.71

It can be observed from Table 3 that the number of living children is inversely related to the educational level. Though this relationship held good both in the case of the husbands as well as the wives, it was noticed that the number of living children as related to the wife's educational level was less than by the husband's educational status at every stage of education. It may be concluded that family size is more dependent on the wife's than on the husband's educational level.

About 31.6% of the tubectomy acceptors had two to three living children. Thus, about 19 years of their reproductive life was protected from conception considering the mean age at sterilisation as 30 years and age 15-49 as the fertile period (Table 4). As against this, about 68% had four or more living children and about 12-17 years of their fertile period was protected (as their mean age ranged from 32-37 years), in spite of the fact that this group had a greater number of living children than the former.

TABLE 4

Mean age at tubectomy and number of living chilaren

Number of living children	Tubectomy acceptors	Mean age of acceptors (in years)
1	—	—
2	53 (6.5)	30.40
3	205 (25.2)	30.41
4	233 (28.6)	32.32
5	180 (22.1)	34.17
6	89 (10.9)	35.13
7 +	53 (6.5)	37.00
I.N.A.	2 (0.2)	*
Total	815(100.0)	32.73

* I N A = Information not available

TABLE 5

Children ever born and proportion of surviving and non-surviving children by age at sterilisation

Age of acceptors (years)	Average number of living children	Average number of children ever born	Proportion of surviving children	Proportion of non-surviving children
20 - 29	3.32	3.75	0.8853	0.1147
30 - 44	4.57	5.74	0.7962	0.2038

Table 5 provides a plausible explanation of these factors which show that women who were operated between 20-29 years of age, had 3.32 living children as against 4.57 in the case of women who accepted tubectomy at a later age—between 30-44 years. As mentioned earlier, the fear of infant and child mortality (proportion of non-surviving children was more for the 30-44 year old women than for the 20-29 group), may have stopped women aged 30-44 to accept sterilisation at an earlier age, though they had more living children than those who accepted it in their twenties.

Demographic effectiveness

Demographic effectiveness is evaluated in terms of births averted. For estimating the number of births averted, it was assumed that the fertile period is between 15 to 49 years and that tubectomy is cent per cent effective.

Sources of data and methodology

The Expert Committee's projected $\overset{o}{e}_{o}$ values of Maharashtra were used for the estimation of number of births averted, as Ratnagiri's $\overset{o}{e}_{o}$ values were not available. Corresponding survival ratios for each age group were obtained from the Model Life Tables[5] by linear interpolation. Joint survival ratios of husbands and wives were computed by taking into account the fact that the husbands were five years older than their wives.

Maharashtra's age specific fertility rates (ASFRs) were taken as the ASFRs of Ratnagiri district as both ASFRs or age specific marital fertility rates (ASMFRs) of Ratnagiri district were not available. The 1971-72 urban and rural ASFRs of Maharashtra were taken from the Family Welfare Planning Year Book[6] and combined ASFRs (ASFRs of urban and rural) were obtained by weighted means (giving due weightage to rural and urban populations). The ASFRs thus obtained were converted into ASMFRs (by dividing ASFRs by the proportion of married women). The rest of the procedure was similar to that adopted for the computation of the number of births averted by the Government of India.[8]

Number of births averted

The total number of births averted from the initial year to the year when all the survivors pass through and complete their reproductive period is presented in Table 6. The number of births averted during the intervening years (at years other than initial, 5, 10, 20 and 25) were worked out by linear interpolation.

The computed total number of births averted for 812 tubectomies was 1423.47, thus giving 1.75 averted births per sterilisation. As compared to the Government reference publication[8] the number of births averted per sterilisation in this study in somewhat low, probably due to the higher mean age of acceptors in the present study.*

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* The mean age of the sterilised persons in the present study worked out to 33 years while in Reference 8 it was 29.58 years

TABLE 6

Births averted to the cohort of sterilised women*

Years	Births averted
Initial year	166
5th „	105
10th „	54
15th „	21
20th „	5
25th „	0.47
Total number of births averted	1423.47

* Computed only for 812 women, as the ages of three women were not reported

Conclusion

It is felt that women who accept sterilisation at later ages, do sc because the fear of infant and child mortality works against thei accepting it earlier in their reproductive life. Dissemination c knowledge about well-baby programmes like immunisation, materna and child health services, etc., may go a long way in dispelling suc fears so that younger women with smaller families will readily com forward to accept sterilisation.

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